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CHANGING TRENDS IN CAESAREAN SECTION RATES IN IOG

A Comparative Study Between the Years 2000 & 2006

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CERTIFICATE

This is to certify that this dissertation entitled **" CHANGING TRENDS IN CAESAREAN SECTION RATES IN IOG – a comparative study between the years 2000 & 2006"** is the bonafide work done by **Dr.A.MYTHILY** at the Institute of Obstetrics and Gynaeoclogy, Government Hospital for Women and Children attached to Madras Medical College, Chennai. from 2005-2008.

This dissertation submitted to Dr.M.G.R.Medical University is in partial fulfillment of the University rules and regulations for the award of M.D.Degree in Obstetrics and Gynaecology.

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CONTENTS

ABBREVIATIONS

APH	-	Antepartum haemorrhage.
AP eclampsia	-	Antepartum eclampsia
APLA	-	Antiphospholipid antibody syndrome
ACOG	-	American college of Obstetricians andGynaecologists
BOH	-	Bad obstetric history
BMJ	-	British Medical Journal
BJOG	-	British Journal of Obstetrics and Gynaecology
CI	-	Confidence Interval
CPD	-	Cephalo pelvic disproportion
CS	-	Caesarean section
CPT	-	Complete perineal tear
DTA	-	Deep transverse arrest
FD	-	Fetal distress
GA	-	General Anaesthesia
GDM	-	Gestational Diabetes Mellitus
Gyn.,Gynaecol	-	Gynaecology
HIV	-	Human immunodeficiency virus
IUGR	-	Intrauterine growth restriction
IOG	-	Institute of obstetrics and gynaecology
IPsepsis	-	Intrapartum sepsis
MMR	-	Maternal mortality rate
N.No	-	Number
NMR	-	Neonatal mortality rate
NS	-	Not significant
NST	-	Non-stress Test
Obs.,Obstet.	-	Obstetrics

OBG	-	Obsterics and Gynaecology
PNMR	-	Perinatal mortality rate.
PET	-	Pre eclamptic toxaemia.
P1	-	Para 1
P2	-	Para 2
P3	-	Para 3
P4	-	Para 4
P5	-	Para 5
RCOG	–	Royal College of Obstetricians and Gynaecologists
ROP	-	Right occipitoposterior
RPT. CS	-	Repeat Caesarean Section
UK	-	United kingdom
US	-	United states
VBAC	-	Vaginal birth after Caesarean

HISTORY AND EVOLUTION OF CAESAREAN SECTION[52,85]

It goes back long before Julius Caesar to 718 BC, when Numa Pomphilus, king of Rome brought in a law which forbade the burial of a pregnant woman unless her child has been removed from abdomen and buried separately. Thus 'Lex Regis de interendo martin' became the practice and turned into lex caesaria in 200 BC, when the kings became cesars. At this time the operation was only performed post mortem. It was thought that Julius Caesar was born by this method, but he could not have been delivered of his mother Aurelia by this method, as she was still alive during the gallish wars and was also present in the forum on the day Julius Caesar was assassinated.

An alternate explanation is that the name came from latin word caedere meaning to cut. Because section is derived from the latin verb 'seco' which also means cut, the term caesarean section seems tautological –thus the term caesarean delivery is used. The Catalan saint Raymond Nonnatus (1204-1240), received his surname from the Latin "non natus" (not born) – because he was born by Caesarean section. His mother died while giving birth to him. In 1316, the

future Robert 2 of Scotland was delivered by caesarean section-his mother Marjorie Brus died; this may have been the inspiration for Macduff in Shakespere's play 'Macbeth'

The first recorded successful caesarean section was done, not by a doctor, but by Jacob Nufer, a swinegelder who lived in Sigerhausen in Switzerland. In 1588, his wife had a prolonged labour for 13 days and Nufer used his swinegelding instruments to cut the baby out. It was alleged that Mrs.Nufer had subsequent pregnancies, so she herself survived but, this is difficult to believe for the abdominal wall was not closed, but left open.

First recorded operation in UK was done by an Edenberg surgeon on 29 june, 1737. Unfortunately both mother and child died. A midwife Mary Donally did a successful Caesarean section with survival of mother and child at Charlemount in Ireland in 1738. After twelve days of labour, the woman could not deliver and Mary performed a section. It is said that she held the wound together with her fingers, while her neighbour went to fetch silk and a tailors needle with which she sutured the wound. James Young in 1851 did caesarean section in 1851 under GA.Upto end of 19th century

maternal mortality was high. In 1878, Lapage reported that no woman operated upon in Paris between 1799 and 1877 survived. The uterine wound was left unsutured which was thought necessary to allow the escape of lochia. In 1876, Porro described a technique which combined subtotal hysterectomy with marsupialization of the cervical stump which reduced the maternal mortality. In 1882, Max Sanger from Leipzig published a monograph based largely on the experience from surgeons in United states who had used internal sutures, explaining the principles and techniques of caesarean delivery, including aseptic preparation, with special emphasis on a two step uterine closure with silver wire and silk and careful attention to haemostasis. This together with GA, antiseptics decreased the maternal mortality rate.

Fosiander of Geottingen (1759-1822) and Munroker and J. Boliver Delec (1869-1942) advocated the low transverse operation. 1st extra peritoneal operation was described by Frank in 1907. In 1912, Optiz described the vertical lower segment caesarean section with serosal closure. In 1912, Kronig contended that the main advantage of the extra peritoneal technique was

that the uterine incision was covered by peritoneum. With minor modifications this lower segment technique was introduced into the United States by Beck (1919) and popularized by DeLee (1922) and others. A. particularly important modification was recommended by Kerr, in 1926, who preferred a transverse rather than a longitudinal uterine incision.

In recent years however the use of Caesarean section has become increasingly controversial. Uncertainty exists about the relative risks and benefit of the operation (Chamberlain 1993) as the indications are progressively widened and concern is expressed among health professionals and consumers about its increasing use. A large increase in caesarean section in USA after 1965 appeared to be justified by improved perinatal mortality rate, yet similar perinatal improvements occurred in Dublin with minimal increase in CS (Bottom et al 1980)[13].

INTRODUCTION

Caesarean section can be defined as the birth of a foetus through a incision in abdominal wall (Laparotomy) and uterine wall (hysterotomy). This

definition does not include removal of the foetus from the abdominal cavity in case of rupture of uterus or in case of abdominal pregnancy[85].

The steady rise in caesarean section rates in an emerging area of concern in mother-child healthcare and a matter of international attention, since the trend is no longer confined to western industrialised countries. Monitoring time-trends in caesarean section rates has been considered a useful approach in the recognition of this rapidly-changing health policy and in estimating the magnitude of this problem[33].

What has already been described as the "caesarean birth epidemic"[66] may now well be considered a true pandemic emerging issue in mother-child healthcare, since the trend is no longer confined to western industrialized countries[19]. Noteworthy in this respect is the study by Belizan et al[8] reporting on caesarean section rates in 19 Latin American countries, revealing caesarean section rates ranging from 16.8% up to 40% in 12 of these countries.

Making sense of rising caesarean section rates[46]:

In Canada and the United States the appropriate role of caesarean section was an important women's issue, a topic for research on patterns of use, and a target of professionally endorsed guidelines in the early

1980s. Two decades later, women, researchers, and the medical establishment are once again debating the use of this procedure. Historically, as caesarean section rates rose and crossed the 15% mark ,that the World Health Organization[86] had suggested as an upper limit, research focused on determining the extent to which the increase was driven by medical indications[2]. The medical profession defined approaches to care that would reduce or limit the rise in caesarean section, and systematic efforts were made to implement these strategies[45,28]. Currently, caesarean section rates in Canada and the United States are close to 27% and over 21% in England, Wales, and Northern Ireland[67].

Recent articles in leading journals support offering women, in whom an accepted medical indication for the procedure does not exist, the right to choose a caesarean section as the mode of delivery (that is, a primary elective caesarean section or caesarean section on demand)[47,34]. Offering elective caesarean sections can only put further upward pressure on rates of caesarean sections. Offering elective caesarean sections has been endorsed by professional associations in Canada and the United States despite concerns raised by women's groups[73] and is being debated by the International Federation of Gynaecology and Obstetrics[43,8,30].

The appropriate use of caesarean section, like the appropriate use of any medical intervention, should be based on evidence on risks and benefits. One reason for the shift in thinking could therefore be new

evidence supporting a larger role for caesarean section. In terms of recent randomized trials, a search of the Cochrane Library shows that, other than a recent trial of planned vaginal delivery versus planned caesarean section for term breech presentation[36], no new large trials exist that compare the risks and benefits of caesarean section with vaginal delivery for common indications. Moreover, the search shows that there is very little evidence for any period of time from randomized controlled trials that compare caesarean section with vaginal delivery.

The articles supporting elective CS cite primarily observational studies, rather than randomized controlled trials, to make two main points. Caesarean sections are increasingly safe for women and children, and the rate of pelvic floor problems (particularly urinary incontinence)[34,47] is substantially higher in women who had vaginal deliveries than in women who had caesarean sections. Although this evidence is discussed in the context of elective caesareans, it can be seen as challenging the professional perspective on the risk-benefit trade off for caesarean sections compared with vaginal delivery for specific indications.

Other potential reasons for the shift in how caesarean sections are perceived include changes in patient's preferences and in the part that doctors play in decision making. How women view the care they want to receive in labour and delivery may have changed, moving from the notion of demedicalisation that was common in the early 1980s, to the increased

demand for the use of medical technology found in today's world. The way in which the relationship between doctors and patients is viewed by patients and doctors may have changed. The historical role of the doctor acting as the informed agent for the patient may be changing, thanks to the increasing reliance on a mode, where the patient is seen as the consumer and the doctor as supplier of services. Suppliers may find it difficult to ignore consumers' demands. Patients preferences have an important role in informed decisions, but these preferences can be expressed fairly only in the context of the best evidence on risks and benefits, and doctors should not be expected to provide services that are of no clinical benefit or potentially harmful.

Without solid evidence on the risks and benefits of caesarean section versus vaginal delivery, making informed decisions with individual patients is difficult. This lack of evidence on risks and benefits, combined with the changing preferences of patients and roles of doctors, makes setting national goals for rates of caesarean sections virtually impossible.

Three specific indications- fetal distress, dystocia, and previous caesarean section - account for most caesarean sections. We have little evidence from controlled trials on the risks and benefits of caesarean section for these indications. One obvious goal is to support large, well designed, randomized trials that could help define appropriate care for these common indications. However, trials take time, and in the short

term, decisions for individual patients and for health systems will have to be made in the face of uncertainty about the risks and benefits of caesarean section compared with vaginal delivery. Another goal should therefore be to have a more comprehensive and frank debate about the ethical issues related to the role of doctors, preferences of patients, and informed consent with respect to caesarean sections.

Since the earliest days of the modern caesarean section in the 1880s[63], there has raged within the profession a debate about the appropriate indications for this operation. For several decades after the availability of antibiotics and blood banking, the cesarean section rate in the US remained in the 4% to 6% range. Between 1968 and 1978, the rate tripled to 15.2%. A 1981 report commissioned by the National Institutes of Health (NIH)[81] expressed concern about the rising rate, and its recommendations for reducing caesareans included qualified support for VBAC. By the 1990s, individual hospital caesarean section and VBAC rates were being published , and interpreted by consumer groups as indicators of obstetric care quality. In 1991, the Healthy People 2000[37] initiative advocated a 15% cesarean rate as a US health promotion objective by the year 2004. Despite expert and lay opinion that many caesareans are unnecessary, the rate continues to increase in the US exceeding 27% in 2004 and shows no sign of abating[30,87]. Indeed, there is growing discussion and acceptance of patient- choice cesarean section as legitimate birth option[47].

Defining an ideal cesarean section rate

Attempts to define, or enforce, an “ideal” caesarean section rate[11] are futile, and should be abandoned. It will be argued that the caesarean rate is a consequence of individual value-laden clinical decisions, and that it is not amenable to the methods of evidence-based medicine. Although, as Cosgrove [20](New Jersey) observed in 1939, “no case should ever be decided with one eye on the statistics of the hospital,” academic obstetricians have long offered opinions about the ideal cesarean section rate.

The caesarean rate is, thus, a consequence of subjective clinical decisions, and cannot be preordained. An ideal cesarean rate cannot be defined outside a framework of individual values and assumptions. In 1972, Cochrane signed out obstetrics and gynaecology as the speciality least influenced by evidence.

The future of cesarean section

“We have all regretted that we have not done a caesarean in certain cases, but I have yet to regret one that I have done” (Humpstone[35] OP. Am J Obstet Gynecol 1920). Few obstetricians would disagree with this statement, expressed by a prominent New York obstetrician in 1920. As the obstetric population becomes older, heavier, and increasingly primiparous, the caesarean rate will continue to rise. This trend will be accentuated by the reluctance, or inability, of obstetricians to perform operative vaginal deliveries. Patient - choice caesarean will become routine in women already at high risk for intervention. Because

pregnancy and labor are “normal” only in hindsight, it will be difficult for obstetricians to deny requests for elective caesarean from women with no traditional risk factors. Within the profession, the malpractice crisis gets a good share of blame for the rising caesarean rate.

It is time to stop talking about “target” or “ideal” cesarean rates[48]. Such numbers may be of interest to epidemiologists and academic leaders, but they don’t help clinicians make decisions in the labor room .No one should criticize an obstetrician’s decision to operate without a through review of each case. In practice, such scrutiny is usually reserved for “sentinel” events. Because the latter are infrequent and good luck alone prevents the worst consequences of bad obstetrics, the quality improvement process would be better served by examining a random sample of individual charts for deficiencies of obstetric conscience, judgment, and documentation.

REVIEW OF LITERATURE

TRENDS IN CAESAREAN SECTION RATES

AND INDICATIONS

CAESAREAN SECTION RATES IN UNITED STATES

Currently one out of 10 American women delivered each year in the United States has had a previous caesarean delivery(Ventura and associates 2000)[85].

More than 8,25,000 women were delivered by caesarean section in 1998 and 37% of these had repeat procedures. The overall caesarean delivery rate progressively increased in United States each year between 1965-1988, rising from 4.5% of all deliveries to about 25% (US public health service 1991). Most of this increase took place in 1970's and occurred through out the western world. According to Belizian and colleagues (1999) this also occurred in Latin America.

In one response to the increased CS rate, the US public health service 1991 set a goal of an overall 15% CS rate for the year 2000. An example of the unique response was the 1992 legislative mandate in Florida, that stipulated dissemination of practice guidelines for obstetricians.

Between 1989-1996 the annual rate of caesarean delivery decreased in United States (Fig 2). This was in the large part due to increased rate of vaginal birth after caesarean[19] and to a lesser extent, a small decrease in

the primary caesarean rate. Since 1996 how ever, the total caesarean rate has increased every year and in 2002 it was 26.1%.From these figures, it is apparent that the 1991 US public health service goal of an overall caesarean delivery rate of 15% by the 2000 was not achieved. Undoubtedly, one explanation of this change in direction of national CS rate is increased concern about the foetal safety of labour in women with prior caesarean section birth (Sach's and colleagues 1999).

In 2002[7], there were 634426 primary caesareans and 1043846 overall cesarean births in the United States, this representing an increase of 246727 over the number of such births in 1996. More than half (53.0%) of that growth was a result of the increase of 130702 primary caesareans between 1996 and 2002.

Primiparous Mothers

Despite the decline in the early 1990s, the primary caesarean rate in 2002[10] in the United States (18.0%) was higher than the 1991 rate (15.9%). Among primiparous mothers of all races, the primary caesarean rate generally decreased markedly (11%) from 1991 to 1996; however, it rose even more substantially, to 25.8%, from 1996 to 2002 .In other words, more than one fourth of first-time mothers delivered their infants via caesarean in 2002. In all cases, primary caesarean rates increased with advancing maternal age, with more than half (52.4%) of primiparous mothers older than 40 years delivering via caesarean in 2002.

Multiparous Mothers

Despite the fact that this group was composed of mothers who had given birth to their previous children vaginally, more than 1 in 8 (13.3%) had a primary cesarean in 2002. In terms of trends, the overall 1991 to 1996[7] decrease was half that observed among primiparous mothers, whereas the 1996 to 2002 increase was slightly greater. Rates also increased with advancing maternal age among multiparous women.

The rate of women who delivered babies by caesarean section now stands at a record high in US accounting for 29% of all births in 2004. US health officials try to cut the CS delivery date by half bringing it to 15% by 2010. Use of CS rate has increased by 38% since 1997.

The American college of Obstetricians and Gynaecologist Task Force [3]on caesarean delivery rates (2000) recommended two bench marks for United States for the year 2010.

1. **Caesarean rate of 15.5% for nulliparous women at 37 weeks or more with a singleton cephalic presentation.**

2. **A vaginal birth rate after a prior Caesarean of 37% in women at 37 weeks or more with singleton cephalic presentation who had one prior low transverse Caesarean delivery. US Department of Health and Human Service (2000) has established similar goals for 2010.**

CAESAREAN SECTION RATES IN UK[60]

One in five births in the UK are now by caesarean section. In the 1950's 3% births in England were by caesarean section. By the early 1980's this has risen to 10% and in the 1990's rates started to climb rapidly from 12% in 1990 to 21% in 2001.At present caesarean section rates are close to 27% in London (Births-Evening standard).

National Sentinel Caesarean Section Audit[67]

The National Sentinel Caesarean Section Audit was commissioned by the Department of Health. It collected data on 99% of births that took place in England, Wales and Northern Ireland over a three month period in 2000. Repeat caesareans contributed 29% to the overall CS rate. Of women who previously had a CS, 33% had a vaginal birth. Presumed foetal distress contributed 22% to the overall CS rate. Failure to progress in labour contributed 20% to the CS rate. Breech births, contributed 16% to the CS rate. 88% of breech babies were delivered by CS. Other

indications for a CS included maternal age (for mothers aged under 20 the CS rate was 13% compared to 33% for those aged 40-50), multiple births (59% of twins and 92% of triplets were delivered by CS), low birthweight (for babies weighing less than 2500g the CS rate was 39%) and maternal choice (the primary reason for 7% of caesareans – this ranged from 2 to 27% between units and accounted for 1.5% of all births). 63% of all CS were emergency and 37% elective. Most elective CS were accounted for by repeat CS, breech presentation and maternal request and most emergency CS by presumed foetal distress and failure to progress.

Indications for caesarean section in a consultant obstetric unit over three decades has been studied in the Nuffield Department of Obstetrics and Gynaecology[39], University of Oxford, John Radcliffe Hospital, Oxford, UK. This involved a prospective data collection by clinical record analysis throughout the 12-month periods for 1976, 1986 and 1996. Analysis of 1819 caesarean sections showed an increasing rate, from 6.7% in 1976 to 14.2% in 1996. The proportion of planned antepartum deliveries remained constant at 54% with previous caesarean section given as the main indication in 1976 (55%) and 1986 (49%) and maternal request in 1996 (23%). Caesarean section for intrapartum fetal distress doubled over the study period, with little evidence of improved neonatal or long-term outcome. Caesarean section for failed labour induction and failed first-and second-stage progress all increased and for failed assisted delivery increased from 30% to 88% and for twin pregnancies from 13% to 47%. The rate of caesarean section for women

delivered previously by section remained unaltered at 56%. The proportion of pregancies delivered by caesarean section increased for virtually all indications. Consumer expectation has encouraged a more ready use of section, with maternal choice being the most frequent indication in 1996.

CAESAREAN SECTION RATES IN CANADA[69]

In 2004, the caesarean section rates in Canada was 22.5%. It rose again from 25.6% in 2004 to 26.3% in 2005-2006.

Changes in maternal characteristics and obstetric practice and recent increases in primary cesarean delivery has been studied in Department of Obstetrics and Gynaecology and Pediatrics, Dalhousie University Faculty of Medicine, Halifax, Nova Scotia, Canada. All deliveries in Nova Scotia[17], Canada, between 1988 and 2000 after excluding women who had a previous caesarean delivery (n = 127,564) were studied. Primary caesarean delivery rates increased from 13.4% of deliveries in 1988 to 17.5% in 2000. This was due to increases in caesarean deliveries for dystocia (14% increase), breech (24% increases), suspected fetal distress (21% increases), hypertension (47% increases), and miscellaneous indications (73% increases).

Adjustment for maternal characteristics reduced the temporal increase in primary caesarean delivery rates between 1988- 1991 and 1988-2000 from 21% to 2% . Additional adjustment for obstetric practice

factors further reduced period effects. Midpelvic forceps delivery was significantly and negatively associated associated with primary caesarean delivery (P =001). The conclusion was that the recent increase in primary caesarean delivery rates are a consequence of changes in maternal characteristics. Obstetric practice, which has altered due to changes in maternal characteristics and concerns related to fetal and maternal safety, has also contributed to increase in primary caesarean delivery.

CAESAREAN SECTION RATES IN AUSTRALIA[18]

The number of caesarean section births is continuing to rise, according to data presented in a new report released by the Australian Institute of Health and Welfare (AIHW). The report, Australia's Mothers and Babies 2003, prepared by AIHW's National Perinatal Statistics Unit (NPSU), shows that in that year, 28.5% of mothers had a caesarean section delivery, compared with 19.4% in 1994.

Of caesarean sections in 2003, 57.9% were without labour, while 14.9% were with labour. Among mothers who had given birth previously, 23.1% had previously had a caesarean section. The majority of these mothers (81.4%) had another caesarean section in 2003.Caesarean section deliveries were common for babies with breech presentations at birth. Of these babies, 87.3% were delivered by caesarean section.

Over the period 1994-2003, instrumental deliveries, including forceps and vacuum extraction deliveries, decreased from 11.7% to 10.7%. In 2003, forceps deliveries occurred in 3.9% of mothers, while deliveries by vacuum extraction accounted for 6.8%. There were 256,925 babies reported to the National Perinatal Data Collection, born to 250,584 mothers in 2003. The average age of all mothers was 29.5 years, and for first-time mothers, 27.6 years, continuing the upward trend seen in maternal age in recent years.

USING 10 ROBSON GROUPS TO EXAMINE THE CAESAREAN RATES IN AUSTRALIA AT A TERTIARY HOSPTIAL– MELBOURNE[70]

The clinical practice improvement unit (CPIU) used the Robson frame work to divide the women who gave birth into 10 groups based on specific characteristics and worked out the caesarean section rate for each of the 10 groups in a tertiary hospital in Melbourne.

Robson Groups 1 - 10 Calender year 2005	**Women in this Group**	**CS births and rate**	**Contribution to overall CS rate**
Group 1, first-time-mums, single pregnancy, head down, 37weeks' or more, spontaneous labour	1595	246 = 15%	15%
Group 2, first-time-mums, single pregnancy, head down, 37 weeks' or more, induced or no labour	800	341 = 43%	21%
Group 3, not first-time mums, single pregnancy, head down, 37 weeks' or more, spontaneous	1580	55 = 4%	3%

Robson Groups 1 - 10 Calender year 2005	Women in this Group	CS births and rate	Contribution to overall CS rate
labour.			
Group 4, not first-time mums, single pregnancy, head down, 37 weeks' or more, induced or no labour.	497	115 = 23%	7%
Group 5, women who had a previous CS, single pregnancy, head down, 37 weeks or more	530	408 = 77%	25%
Group 6, first-time-mums, single pregnancy, feet first (breech)	129	112 = 87%	7%
Group 7, not first-time-mums, single pregnancy, feet first (breech)	106	83 = 78%	5%
Group 8, women having multiple pregnancy	174	109 = 63%	7%
Group 9, presentations other than feet-first or head - first (e.g. shoulder)	16	16 = 100%	1%
Group 10, single pregnancy, head – first premature birth (less than 37 weeks)	478	166 = 35%	10%

CAESAREAN SECTION RATES IN ARAB REGION

A cross national study was done by Jurdi and Khawaja in centre for population and health, University of Beirut, Lebanon in 18 arab countries. 4 arab countries had population based CS rate below 5%, while only 3 countries had rates above 15% ,remaining 11 countries had CS between 5-15%.

Primary caesarean sections in nulliparous and gradmultiparous in Saudi women from the Abha region[61] – indications and outcomes has been studied in the Department of Obstetrics and Gyanecology, College of Medicine and Medical Science, King Khalid University, Abha, Saudi Arabia. 393 nulliparous women and 432 grandmultiparous women (parity>5) who had primary caesarean section at the Abha Maternity Hosptial over a 3-year period, (1997-1999) formed the basis of the study. The primary caesarean section rates in nulliparous women & grandmultiparous women and were 19.4% and 18.3% respectively with no statistically significant difference ($p>0.05$). The most common indication for surgery in the two groups of patients was fetal distress (nulliparous group = 28%, grandmultiparous group = 25%; p=NS), followed by failure of progress in labour. (nulliparous group = 22.7%, grandnulliparous group = 21.6%, p=NS). Antepartum haemorrhage (APH) was the indication for primary caesarean section in 6.8% of the nulliparous group and 13.9% of the grandnulliparous group, ($p<0.05$).

CHANGING TRENDS IN RATE OF CS IN A TEACHING HOSPITAL IN JORDAN [21]

This is a retrospective study analysing the reasons behind the observed increasing rate of caesarean section over a 10- year period (1990-99) in the obstetric unit of Jordan University Hospital. The duration of the study was divided into 2, of 5 years each (1990-94, 1995-99). There was a 6.9% increase in the CS rate over the second half of the

study period. This was statistically significant ($p<0.001$). All the indications contributed significantly to rise. Fetal distress had the highest contribution 33.5%, while repeat CS and malpresentation contributed to 21.5% and 21.3%, respectively. This increase was not associated with a significant change in the perinatal mortality. The rise in the caesarean section rate was higher in primigravida compared with multigravida (10.9% vs 6.2%). Fetal distress had the highest contribution in primigravida.

In multigravida, if we exclude repeat caesarean section, the major indications were fetal distress and malpresentation. The percentage of elective and emergency caesarean section was similar in both study periods. The reasons behind the increase in CS rate couldn't be understood. Probably a lower threshold concerning the decision to perform the CS rather than change in obstetric management is responsible for this rise.

A STUDY OF CAESAREAN BIRTHS AT A TEACHING HOSPITAL IN MULTAN[22]

A study was conducted to analyze the factors responsible for apparently high caesarean section rate in a teaching hospital, Nishtar Hospital, Multan and to assess maternal morbidity and mortality as well fetal outcome after caesarean section. Total 770 pregnant women were registered, 396 (51.43%) underwent caesarean section and 374 women (48.57%) had vaginal delivery. Most of the women who underwent

caesarean section were in 20-30 years age group and of low parity i.e 0-4 (80%). Out of 396 patients, 325 (82.07%) had emergency caesarean section versus 71 (17.96%) elective caesarean section and 293 (74%) were non- booked cases that came to hospital for the first time as an emergency. Majority of the patients who underwent caesarean section a teaching hospital, tertiary referral center, were high risk, non-booked cases and already had a trial of labour. So abdominal delivery was the only choice to manage these cases. Maternal morbidity and mortality was high in emergency non-booked cases versus elective caesarean section.

Caesarean birth versus vaginal delivery

Type of Delivery	Total Number	Percentage
Caesarean births	396	51.43
Vaginal deliveries	374	48.57
Total	770	100.0

Out of 770 women, 396 patients underwent caesarean section and 374 women had vaginal delivery. Caesarean section rate was 51.43%

Maternal age wise distribution

Maternal age (Years)	Cases	Percentage
17-20	48	12.12%
21-24	89	22.40%
25-28	79	19.90%

29-32	115	29.00%
33-36	39	09.80%
37-40	15	03.78%
41-44	11	02.77%

Most of the patients were in the 20-30 years age group, the youngest was 17 years of age and the eldest was 44 years.

Parity and caesarean birth

Parity	No.of cases	Percentage
Primigravida	95	24.00
Para 1-2	122	30.80
Para 3-4	103	26.00
Para 5-6	41	10.35
Para 7-10	35	08.80
Total	396	99.95

Majority of the women were of low parity i.e 0-4, comprising 80.8% of cases.Among grand multiparous women who comprised 19.15% of cases, two patients were para 10^{+}.

Out of 396 patients who underwent caesarean section, 103 patients (26%) were booked cases who received antenatal care and 293 patients (47%) were non-booked cases who came to hospital as emergency.

Booked cases versus non-booked cases

Type	No. of Cases	Percentage
Booked cases	103	26.0
Non-booked	293	74.0
Total	396	100.0

Indications of caesarean section.

Indication	No.of cases	Percentage
Repeat CS	103	26.00
Antepartum haemorrhage	71	17.92
CPD and malpresentations	56	14.14
PET and eclampsia	53	13.38
Failure to Progress /Fetal distress	51	13.38
Others	14	03.50
Total	396	99.99

Repeat caesarean section, antepartum haemorrhage, cephalopelvic disproportion and mal-presentation, pre-eclamptic toxaemia and eclampsia, failed progress of labour and fetal distress and obstructed labour were the common indications for abdominal delivery

CAESAREAN SECTION RATES IN INDIA

A critical appraisal of cesarean section rates at teaching hospitals in India was studied in the Division of Reproductive Health and Nutrition, Indian Council of Medical Research[44], Ansari Nagar, New Delhi, India to obtain an estimate of caesarean section rates and examine the indications and consequences at teaching hospitals in India. Information was obtained on total number of normal and caesarean deliveries during 1993-1994 and 1998-1999 from 30 medical colleges/teaching hospitals. In addition, prospective data were recorded for a period of 2 months on

7017 consecutive caesarean sections on indications for caesarean delivery, associated complications and mortality. The overall rate of caesarean section increased from 21.8% in 1993-1994 to 25.4% in 1998-1999.

Among the 7,017 caesarean section cases, 42.4% were primigravidas, 31% had come from rural areas, 20.8% were referred including 8% with history of interference, 66% were booked cases, period of gestation was less than 37 weeks in 21.7% and in 18% the surgery was elective. Major indications for caesarean section included dystocia (37.5%), fetal distress with or without meconium aspiration (33.4%), repeat section(29.0%), malpresentation (14.5%) and PET (12.5%). Maternal and perinatal mortality was 299/100,000 and 493/1,000 deliveries, respectively, and is high inspite of the increase in the caesarean section rates.

There is need for standardized collection of information on all aspects of childbirth to ascertain the incidence and indications of caesarean sections nationally so that comparison and improvements of care can take place.

National caesarean section rates[36]

Andhra Pradesh	30.80%
Assam	21.30%
Bihar	9.67%
Delhi	35.44%
Goa	54.55%
Gujarat	37.29%
Haryana	24.81%
Himachal Pradesh	10.65%
Karnataka	30.20%
Kerala	58.52%
Madhya Pradesh	11.21%
Orissa	10.32%
Punjab	38.76%
Rajasthan	9.80%
Tamil Nadu	39.64%
Uttar Pradesh	6.41%
West Bengal	22.22%

Data from National Family Health Survey, India 1992-93 (Mishra US, Ramanathan M, Healthy Policy Plan 2002 (Mar: 17 (1): 90-8)

Changing trends in caesarean section was studied done at the LTMG[4] hospital, which is a tertiary referral institute which cares for over 6000 deliveries per year by Arahita Pandole.K. Sanjay Rao,Vijay Pawar, Manjiri Jain, Suchita Pundit, V.R.Badhwa. – (Journal of Obst. and gyn. India 1989). 100 cases of caesarean delivery were analysed regarding indications morbidity, mortality and anaesthesia complications.

Indication for LSCS	Percentage
Previous LSCS	27
Foetal distress	22
Malpresentation	13
Midpelvis CPD	15
Nonprogress of Labour	13
Antepartum haemorrhage	6
Macrosomia	4

CAESAREAN RATES IN CHENNAI

A high rate of caesarean sections in an affluent section of Chennai[62] : National Med J India. 1999 Jul-Aug; 12(4); 156-8. Pai M. Sundaram P.Radhakrishna KK, ThomasK, MuliyilJP.Dr. Rangarajan Memorial Hospital, Sundaram Medical Foundation, Chennai, Tamil Nadu, India.

The survey was a standard Expanded Programme on Immunization 30-cluster design, carried out in an urban educated, middle/upper class population in Chennai. Mothers of 210 children aged 12-36 months were interviewed and data collected on immunization and breast- feeding practices. Of the 210 babies, 95 (45%, 95% confidence interval : 39.51.3) had been delivered by caesarean section.

High caesarean rates in Madras (India)[32]: population based cross sectional study-Sreevidya S.Sathiyasekaran BW. Epidemiology Unit, Tata Institute of Fundamental Research, Deemed University, Mumbai, India

Seven hundred and eighty resident women who delivered in Madras between June 1997 and May 1999 were studied. Cluster sampling was done using streets as cluster units. Thirty clusters were selected from 1255 clusters by the probability proportion to size method and 26 women were selected randomly from each cluster. Total population caesarean section rate was 32.6% and primary caesarean section rate was 25%.Total caesarean section rates in the public, charitable and private sectors were 20%, 38% and 47% respectively. Private sector deliveries had an odds ratio of 2,4 (95% CI 1.5, 3.8) of a primary caesarean section delivery in comparison with the public sector after adjustment for parity, age at delivery of mother and educational status.

Reasons for quadrupling of caesarean rates[84]

1. Women are having fewer children, thus, a greater percentage of births are among nulliparous, who are at increased risk for caesarean delivery.

2. Average maternal age is rising and older women, especially nulliparous are at increased risk for caesarean delivery. In the past 2 decades rate of nulliparous births more than doubled for women aged 30-39 yrs, increased by 50% in women 40-44 yrs old[58].

3. In the early 1970's, increased use of electronic foetal monitoring has been associated with increased caesarean delivery rates. Although caesarean delivery performed primarily for foetal distress comprises only a minority of all such procedures, in many more cases concern for an abnormal or "non reassuring" foetal heart rate tracing lowers the threshold for caesarean delivery performed for abnormal progress of labour.

4. Vast majority of fetuses presenting as breech are now delivered by caesarean section.

5. Incidence of mid pelvic forceps and vacuum deliveries has decreased. According to ACOG (1994) operative vaginal deliveries at stations higher than (+2) should be performed in rare emergencies with simultaneous preparation for caesarean for caesarean delivery.

6. Rates of labour induction continues to rise and induced labour especially among nulliparous, increase the risk of caesarean deliveries.

7. The prevalence of obesity has risen dramatically and obesity also increases the risk of caesarean delivery.

8. Consent of malpractice litigation as contributed significantly to the present caesarean delivery rate. More than a decade ago, it was reported that failure to perform a caesarean delivery and thus avoid adverse neonatal neurological out come or cerebral palsy was the dominant obstetrical claim in the United States. (Physicians Insurance Association of America, 1992). But this is troubling in view of well documented lack of association between CS delivery and any reduction in childhood neurological problem including both cerebral palsy and seizures (Lien and coworkers 1995, Schelle and Nelson 1994).

9. Some elective caesarean deliveries are now performed due to concern over pelvic floor injury[50] especially urinary incontinence associated with vaginal birth.

10. Socio economic and demographic factors may play a role in CS birth rates. Gould and Associates (1989) reported that the primary CS delivery rate in Los Angeles was 23% in women from areas with a median family income of more than 30 thousand dollars compared with 13% for women with median income less than 11 thousand dollars.

STRATEGIES TO ADDRESS GLOBAL CAESAREAN SECTION RATES

They are categorized as

1. **Psychosocial**

   One to one trained support during labour (Level – 1, evidence)

2. **Clinical**[71]

   a) External cephalic version, b) Vaginal birth after caesarean section (Cochrane Database of systemic reviews)

   VBAC – Some women who have delivered previously by caesarean section prefer to have their next child vaginally. It has several advantages over repeat caesarean section – shorter hospital stay, more rapid maternal recovery and lower medical costs. It goes a long way in reducing caesarean section rate. (Journal of Obsterics Gynaecology Feb. 2005 : 27 (2); (164-88).

3. **Structural**

   Mandatory second opinion[84,71] – A cluster randomized controlled trial in Latin America showed that this policy could prevent 22 intra partum caesarean sections per 1000 deliveries (Lancet, June 2004).

INDICATIONS OF CAESAREAN SECTION

In general caesarean delivery is used when labour is contradicted or vaginal delivery is unlikely to be accomplished safely or within a time frame necessary to prevent the development of fetal and / or maternal morbidity in excess of that expected following vaginal delivery.

ABSOLUTE INDICATIONS

- Previous two caesarean section
- Vaginal atresia
- Placenta Praevia Type –IV
- Carcinoma of Cervix

RELATIVE INDICATIONS

- Contracted pelvis and Cephalopelvic disproportion is the commonest indication
- Previous caesarean section associated with other risk factors
- Fetal distress during first stage of labour
- Abnormal uterine contractions leading to non progress of labour.
- Antepartum haemorrhage due to placenta praevia or abruptio placenta.
- Malpresentations like breech, transverse lie, brow and mentoposterior position of face.

- Bad obstetric history
- Failed surgical / Medical induction
- Primi gravida with associated risk factors
- Uncontrolled diabetes with previous history of fetal wastage
- Pelvic tumours such as cervical / broad ligament fibroid
- Impacted ovarian tumour
- Vaginal herpes
- HIV in mother, to prevent mother to child transmission. It prevents 50-87% transmission – (New England Journal of Medicine 340: 977, 1999).

Common indications for Caesarean Section

Indications	**Incidence %**
Previous Caesarean	36%
Dystocia / CPD	30%
Malpresentation	11%
Fetal distress	9.8%
Others	13.6%

More than 85% are performed because of 1. Previous caesarean section. 2. Labour dystocia. 3. Foetal distress. 4. Breech[84].

CONTRIBUTION BY INDICATION TO OVERALL CAESAREAN DELIVERY RATE IN FOUR COUNTRIES DURING 1990[51,52].

Indications	Caesarean delivery rate per 100 total deliveries			
	Norway	Scotland	Sweden	United States
Previous CS	1.3	3.1	3.1	8.5
Breech	2.1	2.0	1.8	2.6
Dystocia	3.6	4.0	1.7	7.1
Foetal Distress	2.0	2.4	1.6	2.3
Others	3.7	2.7	2.4	3.2
Overall CS Rate	12.8	14.2	10.7	23.6

Modified from Notzon and colleagues(1994).

AIM OF THE STUDY

The aim of the study is

1. To study the changing trends in caesarean section rates between the years 2000 & 2006 in IOG.

2. To study the changing trends in indications for caesarean sections between the years 2000 & 2006 in IOG.

3. To study the maternal and perinatal outcome in caesarean sections in the years 2000 and 2006.

MATERIALS AND METHODS

DESIGN OF STUDY: Observational retrospective study.

STUDY SETTING: Institute of Obstetrics and Gynaecology ,Egmore, Chennai.

PERIOD OF STUDY: Years 2000 and 2006.

POPULATION: In this study, 7186 caesarean sections done in 2000 were compared with 7448 caesarean sections in 2006 with respect to incidence, indications, age, parity, maternal mortality and perinatal outcome.

DATA: All the data were obtained from the medical records department, IOG. Details regarding perinatal and neonatal outcome were obtained from Neonatalogy department, IOG.

DATA ANALYSIS: The study is a type of descriptive statistics and data analysis was done using chi-square test .

OBSERVATION AND ANALYSIS

INCIDENCE OF CAESAREAN SECTIONS IN IOG, EGMORE

	1980	**1985**	**1990**	**1995**	**2000**	**2006**
Total deliveries	16848	16107	16689	15976	20027	17890
Total No. of caesarean section	1809	1780	2698	4195	7186	7448
%incidence	10.7%	11.05%	16.16%	26.2%	35.8%	41.63%

There has been a steady rise in the caesarean section rates from 10.7% in the year 1980 to 41.3% in the year 2006 in IOG,nearly fourfold increase from 1980 to 2006.

VAGINAL DELIVERIES VS CAESAREAN SECTIONS

	Yr 2000		Yr 2006	
	Number	**Percentage**	**Number**	**Percentage**
Total Births	20027		17890	
Total Vaginal Deliveries	12841	64.2%	10442	58.4%
Total Caesarean Sections	7186	35.8%	7448	41.6%

Incidence of caesarean section was 35.8% of total deliveries during the year 2000 and it was 41.6% of total deliveries during 2006. The incidence has increased by 5.8% and is significant statistically as P is 0.03.

PRIMARY CAESAREAN SECTIONS Vs REPEAT SECTIONS

	2000		2006		Pvalue
	Number	**Percentage**	**Number**	**Percentage**	
Total Caesarean sections	7186	35.88%	7448	41.3%	0.03
Primary Caesarean sections	4246	59.14%	4536	60.9%	0.002
Repeat LSCS	2940	40.86%	2912	39.09%	0.714

The increase in primary caesarean sections is significant statistically, P(0.002), while there is not much change in repeat caesarean sections.

PRIMARY CAESAREAN SECTION RATES

Primary caesarean section rate

$$= \frac{\text{no. of births from primary caesarean section} \times 100}{\text{no. of births from deliveries with no previous caesarean section}}$$

Primary Sections	2000		2006	
	Number	Primary CS Rate	Number	Primary CS Rate
Primary CS (Total)	4246	33.9%	4536	43.59%
Nulliparous	3331	25.9%	3724	35.78%
P1	627	4.8%	601	5.77%
P2	235	1.8%	183	1.75%
P3	41	0.3%	19	00.18%
P4	10	00.07%	4	00.03%
P5& above	2	00.01%	1	00.01%

The primary caesarean rates for nulliparous group and P1 group had increased significantly from 25.9% in 2000 to 35.8% in 2006.

PARITY DISTRIBUTION OF PRIMARY CAESAREAN SECTIONS

Parity	2000		2006		P value
	Number	%	Number	%	
Nulliparous	3331	78.5%	3724	82.2%	0.000
P1	627	14.8%	601	13.3%	0.458
P2	235	5.5%	183	4%	0.011
P3	41	1%	19	4%	0.005
P4	10	0.2%	4	0.1%	0.109
P5 and above	2	0%	1	0%	0.564

The incidence of caesarean section has increased in primigravidas as compared to multigravidas. This can be attributed to a greater incidence of caesarean sections for incoordinate uterine action, malpresentations like breech,mild to moderate CPD. In multigravida patients, the above factors are not commonly involved. Incidence of preeclampsia&eclampsia is more common in primigravida and this also contributes to liberalization of indications for caesarean sections.

AGE DISTRIBUTION OF PRIMARY CAESAREAN SECTIONS

Age Group	2000		2006		PValue
	Number	%	Number	%	
< 19 years	293	6.9%	305	67%	0.624
20-24 years	2229	52.4%	2554	56.4%	0.000
25-29years	1210	28.5%	1303	28.8%	0.064
30-34 years	403	9.5%	291	6.4%	0.000
35-39 years	106	2.5%	73	1.6%	0.014
40 and above	9	0.2%	6	0.1%	0.439

The largest number of primary caesareans are done in the age group 20-24 yrs in both 2000 & 2006, followed by the age group 25- 29 yrs. There is a significant decrease in caesarean sections in the age groups 30-34 yrs & 35-39 yrs in 2006 compared to 2000.

INDICATIONS FOR PRIMARY CAESAREAN SECTIONS

2000&2006

Indication	2000		2006		P- Value
	No.	Percentage	No.	Percentage	
CPD	1132	26.66%	1424	31.39%	0.000
Fetal distress	1179	27.7%	1416	31.21%	0.000
Abruptio placenta	79	1.86%	77	1.69%	0.873
Placenta Praevia	70	1.64%	46	1.01%	0.026
Breech	303	7.13%	282	6.2%	0.385
Compound Presentation	2	0.04%	1	0.02%	0.564
Transverse lie	35	0.82%	28	0.61%	0.378
Oblique lie	17	0.4%	12	0.26%	0.353
Posterior Parietal Presentation	8	0.18%	8	0.17%	1.000
Brow Presentaion	14	0.32%	11	0.24%	0.549
Face Presentation	17	0.4%	12	0.26%	0.353
Persistent ROP	78	1.83%	64	1.41%	0.240
Failed induction	320	7.4%	225	5.2%	0.000
Failed acceleration	143	3.36%	202	4.75%	0.001
GDM	20	0.4%	23	0.5%	0.647

Indication	2000		2006		P- Value
	No.	Percentage	No.	Percentage	
IP Sepsis	23	0.54%	18	0.39%	0.435
Cord Prolapse	19	0.45%	7	1.55%	0.019
Hand Prolapse	4	0.09%	3	0.06%	0.705
CordPresentation	1	0.02%	3	0.06%	0.414
Twins	28	0.65%	55	1.21%	0.003
Elderly Primi / Long period of infertility	152	3.55%	75	1.65%	0.000
BOH	157	3.69%	77	1.69%	0.000
Fetal alarm signal	67	1.51%	41	0.9%	0.012
IUGR	31	0.73%	42	0.92%	0.198
Severe PET	74	1.74%	68	1.4%	0.165
Imminent eclampsia	56	1.31%	63	1.38%	0.521
AP eclampsia	51	1.2%	45	0.99%	0.540
Oligohydramnios	72	1.69%	122	2.68%	0.000
DTA	33	0.77%	35	0.77%	0.590
Obstructed Labour	45	1.05%	37	0.81%	0.377

OTHER INDICATIONS

Indication	2000 (No)	2006 (No)
Previous myomectomy	1	4
Threatened rupture	2	1
Previous Fothergill's Surgery	-	1
Abdominal cervicopexy	1	1
Vaginal Septum	1	2
Cervical Septum	1	-
Ovarian Tumours / Cyst	3	1
HIV Positive	-	3
Fibroid Complicating	3	-
Prolapse Uterus	1	-
Previous recto-vaginal Fistula Repair	1	-
CPT	2	-
APLA – Syndrome	-	1

The main indications contributing to the rise in the incidence of primary caesarean sections in 2006 were a) CPD, b) Foetal distress c) twin gestations d) IUGR e) failed acceleration f) oligohydramnios g) Breech presentations. There is a decrease in caesarean sections for failed induction, BOH and elderly primi in 2006 compared to 2000.

NULLIPAROUS GROUP

Indication	2000 N	2006 N	P- Value
CPD	954	1131	0.000
Fetal Distress	955	1225	0.000
Abruptio Placenta	42	49	0.527
Placenta praevia	29	16	0.053
Breech	227	219	0.705
Malpresentation& Malposition	164	175	0.550
IUGR	24	38	0.075
PET	92	115	0.110
Failed Induction	267	211	0.010
Failed Acceleration	116	173	0.001

There is statistically significant increase in the number of caesarean sections in nulliparous group for CPD ,fetal distress, failed induction and failed acceleration in 2006.

PI GROUP

Indication	**2000 N**	**2006 N**	**P-Value**
CPD	136	214	0.000
Fetal Distress	164	135	0.082
Abruptio Placenta	19	21	0.873
Placenta Praevia	29	21	0.258
Breech	51	47	0.686
Malpresentation & Malposition	50	53	0.768
IUGR	5	4	0.739
PET	26	9	0.004
Failed Induction	34	11	0.001
Failed Acceleration	15	22	0.250

There is a statistically significant increase in the number of caesarean sections done for CPD & failed induction in 2006.

P2 AND ABOVE

Indication	2000	2006 N	P-Value
CPD	44	79	0.002
Fetal Distress	60	56	0.641
Abruptio Placenta	18	7	0.028
Placenta Praevia	12	9	0.513
Breech	25	16	0.160
Malpresentation/Malposition	34	43	0.299
IUGR	2	-	
PET	12	4	0.046
Failed Induction	14	3	0.008
Failed Acceleration	14	7	0.127

There is a statistically significant increase in caesarean sections done in this group for CPD and failed induction, while caesareans for APH and breech in this group has decreased. Older multiparous women are associated with increased incidence of diabetes, PET, macrosomia, placental problems and intrapartum complications[27]. One theory for increased rate of caesarean sections is the increased number of dysfunctional labour patterns and an association between a prolonged second stage of labour and maternal age more than 35.

BREECH PRESENTATIONS

	2000		2006	
	Number	**Percentage**	**Number**	**Percentage**
Vaginal deliveries	47	13.43%	38	11.8%
Primary Caesarean sections in Breech	303	86.57%	282	88.2%

There has been a slight increase in the percentage of caesarean sections performed for breech presentations in 2006 (88.2%) compared to 2000 (86.5%), following the recommendations of breech trial.

REPEAT LSCS vs VBAC RATES

	2000		2006	
	Number	%	Number	%
Rpt. LSCS	2940	93.03%	2912	93.27%
VBAC	220	6.96%	210	7.36%

The VBAC rate has shown a slight increase from 6.96 in 2000 to 7.36% in 2006.

CONCURRENT STERILISATION IN 2006

	2006	
	Number	**%**
Total caesarean sections in multi (Primary + Repeat)	3849	100%
Concurrent sterilization	2809	73%
Not sterilized	1040	27%

2006 – EMERGENCY / ELECTIVE LSCS

	EMERGENCY LSCS		ELECTIVE LSCS	
	Number	**%**	**Number**	**%**
Total caesarean section	6386	85.7%	1062	14.3%
Primary caesarean section	4254	93.78%	282	6.21%
Repeat LSCS	2132	73.21%	780	28%

MATERNAL MORTALITY RATES / 1 LAKH BIRTHS IN IOG

YEAR	1980	1985	1990	1995	2000	2006
MMR per 1,00,000/- deliveries	280	140	239.6	253.4	224	273

MATERNAL MORTALITY (2000 & 2006)

	2000	2006	P-Value
Overall maternal deaths	43 deaths	49 deaths	0.532
Foll. LSCS	14 deaths	22 deaths	0.182
Foll. LSCS maternal deaths %	32.55% of total maternal deaths	44.89% of total maternal deaths	
Maternal deaths as % of total LSCS	0.914% of caesarean section	0.295% of caesarean section	

There is no statistically significant change in the maternal mortality rates.

PERINATAL MORTALITY RATE / 1000 LIVE BIRTHS

YEAR	1980	1985	1990	1995	2000	2006
PNMR	70.5	73	72.8	75.1	63	67

There is a mild increase in PNMR from 63 in 2000 to 67 in 2006.

NEONATAL MORTALITY RATE

	2000	2006
Total neonatal deaths	630	587
NMR	3.14%	3.28%
Neonatal deaths following LSCS (Number)	116	104
Neonatal deaths foll. LSCS%	18.4%	17.7%

DISCUSSION

The number of caesarean sections is increasing as more attention is focused on neonatal survival and prevention of trauma to the child during delivery. Limitation to the family size and expectation of a healthy child at the end of pregnancy has led to development of newer technologies in antepartum and intrapartum monitoring[1].In the present series use of USG, NST, intrapartum foetal monitoring has led to increase in diagnosis of foetal distress. The same operation is becoming progressively safer to the mother and child to improved techniques and antibiotics.

Figures from Indian Literature[64] :

Authors and Centres	Earlier incidence in % (Year of caesarean)	Later incidence in % (Year of caesarean)
1. Bhaskar Rao (Madras)	3% (1970)	16.2% (1983)
2. Malini D (Mumbai)	63% (1970)	16.3% (1983)
3. SN Daftary (Mumbai)	3.6% (1978)	12.4% (1993)
4. Arora R (Pondicherry)	12.33% (1978)	27.6% (1989)
5. Jatishwar Singh (Imphal)	3.2% (1972)	7.6% (1982)
Average	5.03%	14.30%

The rising incidence of caesarean section had been a global phenomenon.

CHANGING TRENDS IN CAESAREAN SECTION IN IOG:

Repeat caesarean section

In a study done by Ashok kumar Shukla[5] in a teaching hospital in Mumbai, incidence of repeat caesarean sections in 2000-01 was 80 out of 310 sections i.e., 25.80 per cent and in 1981 – 82 it was 28 out of 155 sections i.e., 18.10 per cent. The increase is statistically significant. In our study repeat caesarean section rate remained almost the same i.e 40.86% in 2000 and 39.09% in 2006. Patients with previous two caesarean sections were not given trial of labour at all and were subjected to caesarean section when they were term. In patients with previous two caesarean sections an ultrasonographic examination was done to determine foetal maturity before taking them for elective caesarean section.

Provided the first operation was carried was out for a non-recurring cause and obstetrical situation near to term in the succeeding pregnancy is normal, a trial of labour is given to all the patients.Patients with an adequate pelvis,a known history of transverse lower uterine segment scar and normal vertex presentaion were considered suitable for vaginal delivery.Menon[49] reported that risk of scar rupture was 1.8% for lower segment sections and 5.6% for classical sections.

Trial of labour after a lower segment caesarean section should be given in an institution where it is possible to change over from vaginal delivery to caesarean section within a very short time. The obstetrician must stay with the patient through out the labour and constant monitoring of foetal heart rate is obligatory. Good uterine action, early engagement of the vertex, progressive dilatation and effacement of cervix with descent of the head were taken as factors indicating successful vaginal delivery. At the earliest sign of foetal distress or failure to progress, if conditions for vaginal delivery are not satisfied, labour should be terminated by caesarean section.

Indications of primary caesarean section mainly seen were

Cephalopelvic disproportion

Incidence of cephalopelvic disproportion in 2000-01 in Ashok Kumar[5] Shukla's study is 8 percent, whereas it was 17.53 percent during 1981- 82. At the Government Hospital for women and children, Madras, during 1954-1961 the incidence of caesarean section for cephalopelvic disproportion was 33.2%, whereas during 1978-79 it was 14.3%. In our study, patients with gross degree of disproportion were taken up for caesarean section without a trial of labour but such cases were few. Patients with borderline disproportion were given a trial of labour with continuous intrapartum monitoring . Patients who failed to show progress in labour in spite of good contractions and those who developed foetal distress during labour were subjected to caesarean section. The

Misinterpretation of the evolution of labour often leads to unwarranted caesarean section. Lack of progress in cervical dilatation or fetal descent are too readily interpreted as CPD. During active phase, contraction disorders which may be related to quite different reasons are often not treated casually and termination of labour simply because an arbitrary time is set for duration of second stage, too often results in unnecessary caesarean section. The incidence of caesarean sections for CPD due to failure of trial of labour in IOG was 26.6% in 2000 and this increased to 31.39% in 2006 and is the leading indication for caesarean sections now.

Dystocia in multipara

In our study in IOG, there is a statistically significant increase in caesarean sections for CPD in multipara, especially P1 group in 2006 compared to 2000 (p0.000). Dystocia must always be kept in mind especially with respect to fetopelvic disproportion, when it is realized that previous uncomplicated deliveries of large babies tend to create a false sense of security, even the most experienced on occasions is apt to be too complacent.

Feeney's[31] findings of no less than 14 cases of disproportion in multi may at first seem surprising as one is tempted to regard the pelvis of a highly parous women as beyond question. Donald[25] states that not only do successive babies tend to get larger but in rare instances the capacity of pelvis may be diminished especially in high degrees of parity

by partial subluxation forwards of the sacrum, so that the sacral promontory advances and hence the true conjugate is effectively reduced.

In Kleins[42] series, large baby rather than the contracted pelvis was responsible for the disproportion. In O' Sullivan's[57] series, the increased inclination of the pelvic brim was found to be main cause for acquired disproportion. According to Adams'[6] (1957), increasing inclination o the pelvic brim is due to lumbar lordosis and subluxation of the sacrum, due to laxity of joint ligaments. Williams[84] (1947) reported 23 cases of disproportion in women of high parity who had previous vaginal deliveries. Repeated pregnancies also lead to calcium depletion, subsequently to osteomalacia and therefore pelvic deformity.

TABLE : SHOWS INCIDENCE OF PRIMARY CS IN MULTI FOR DISPORPORTION.

SLNo.	Author	%
1.	Kleins series[42]	4.1
2.	Dill Leonard Sheffrey[24]	1.62
3.	Jacob & Bhargava (1972)[75]	26.0
4.	Kala Vashista[40]	22.0
7.	Sojolow[78]	7.7

From above studies ,it is evident that disproportion does occur in multi .

Foetal distress

In Ashok Kumar Shukla's study, foetal distress formed one of the leading indications in both the series and there has been an increase in the number of caesarean sections carried out for foetal distress in 2000 – 2001, 95 out of 310 i.e, 30.6 per cent as compared to 26 out of 155, i.e. 16.88 per cent in the past series. In our study in IOG, fetal distress is the second common indication in 2006, but there is a increase from 27.7% in 2000, to 31.21% in 2006. This increase is significant statistically p(0.000), especially, in the nulliparous group. In most of the patients there are also other associated indications e.g., prolonged labour, cord accidents, cephalopelvic disproportion, abruption etc., but they were classified according to the primary indication. A decision to delivery interval of more than 75 min.is associated with poorer maternal and fetal outcomes and should be avoided. (BMJ2004 March 328)[53].

Parameters used for diagnosis:

1. Clinical :Abnormalities in foetal heart rate, i.e foetal tachycardia or deceleration.

2. Ultrasonography : In 2006 apart from clinical parameters, uses of ultrasound and non-stress test have been utilized in diagnosis.Ultra sound was more freely available since 2002 and CTG was more freely available since 2005 in IOG.

Introduction of uninterrupted foetal heart rate monitoring has resulted in an increase rate of caesarean section in many hospitals[75]. This is not available in our hospital. However there is consensus that continuos electronic fetal heart monitoring does not reduce the risk of newborn morbidity related to metabolic acidosis or cerebral palsy more than intermittent auscultation (British medical journal, June 2001).

Antepartumhaemorrhage

In Ashok Kumar's study[5], 18 cases out of 155 during 1981-82 and 14 cases out of 310 in 2000-2001 series had antepartum haemorrhage. Majority of these patients had various degrees of placenta praevia. Caesarean section is a better approach from the point of prognosis of infant in these patients. In placenta praevia, abdominal delivery is the route of choice in over 90% of cases. This has no doubt remarkably reduced the maternal deaths to less than 1% and perinatal mortality to below 30%. In accidental haemorrhage, caesarean rates are almost 45% to reduce maternal complications and to improve fetal salvage. (Bhatt 1989)[9]. In our study in IOG, there is a decrease in the number of caesarean sections performed for APH in 2006 compared to 2000 in all the parity groups.

INCIDENCE OF PRIMARY CS FOR PLACENTA PREVIA IN MULTIPARA

SL No.	Author	%
1.	Jacob & Bhargava series[77]	17.3
2.	Kasturilal[41]	29.6
3.	Kleins' series[42]	37.6
4.	O'Sullivan[57]	25.9
5.	Vashishta[40]	33.9

The number of primary caesarean sections for placenta praevia in multipara in IOG was 42 in 2000 and 30 in 2006 .

TABLE : SHOWS INCIDENCE OF PRIMARY CS FOR ABRUPTIO PLACENTA IN MULTI

SLNo.	Author	%
1.	O'Sullivan[57]	2.6
2.	Kasturilal[41]	8.8
3.	Kleins series[42]	7.0
4.	Palanichamy series[65]	6.6

In IOG, the number of primary caesarean sections for abruption in multi was 37 in the year 2000 and 28 in the year 2006.

Breech presentation

Incidence of breech presentation as an indication for caesarean section has increased from 9 out of 155 in 1981-82 to 30 out of 310 in 2000-01 in Ashok Kumar's study.

Flanagan and co-workers[15] (1987) selected 244 women with a variety of breech presentations (72% were frank breech) for a trial of labour, and there was cord prolapse in 45, foetal distress not due to cord prolapse was diagnosed in another 5% selected for vaginal deliveries. Overall 10% of women identified for vaginal birth underwent caesarean section for foetal jeopardy. Apgar scores, especially at 1 min, for vaginally delivered breech infants are generously lower than when elective caesarean section is performed.

Primigravida presenting with breech: During 1981-82, in Ashok kumar[5] Shukle's study all the primigravida presenting with breech were given vaginal delivery if there no other associated factors e.g., contracted pelvis, footling breech, large baby, etc. Whereas in 2000-2001 series all the primigravidas with breech were subjected to caesarean section. These patients were submitted to an USG examination prior to surgery to rule out any congential malformation. In multiparous patients presenting with breech, a decision to perform caesarean was taken after estimating the breech score suggested by Zatuchini and Andros. There is statistical evidence to the effect that scores of three or less are associated with high incidence of foetal morbidity and prolonged labour is frequent. It is subjected that a score of three or less is an indication for caesarean

section. Cheng and Hannah[16] (1993) found a three to fourfold significantly higher perinatal mortality rate and neonatal morbidity due to trauma in planned vaginally delivered infants. Other risk factors, which were taken into account, were elderly primigravida, precious baby, infertility conception, and post term toxaemia of pregnancy.

The current trend is to employ caesarean sections more frequently especially in primipara, as it is only by this method the obstetrician can avoid the risks of cord compression, cord prolapse, birth trauma and asphyxia which accounts so heavily for perinatal morbidity and mortality in breech.

In Galeway study,of patients who had a primary caesarean section for breech presentation, 93.4% were delivered following a trial. However in patients having breech presentation with previous caesarean section scar, the consensus is that they should have repeat caesarean section.

Bhide[12] (1990) has reported incidence of 15.89% of CS in multi for breech presentation.Umarani Batra[82] has reported incidence of 23.7% of CS in multi done for breech presentation.

In our study at IOG,there has been a slight increase in incidence of primary caesarean sections for breech presentations from 86.57% in 2000 to 88.2% in 2006.Therefore even in 2000, there has been a increase in caesarean sections for breech presentations.Probably the study would have shown a significant change if 1990's data were compared with 2006.

Malpresentation

Incidence of malpresentation was 14.9% during 1981-82 and 4% in 2000-01 in Ashok kumar's study. Out of all malpresentation, transverse lie is the commonest. In our study at IOG, the incidence of transverse lie was 0.82% in 2000 and 0.75% in 2006.

Eastman[26] lists three common causes for transverse lie:

a) Abnormal relaxation of abdominal wall, resulting from high parity.

b) Pelvic contraction

c) Placenta praevia.

Brow presentation is due to any factor, which promotes extension or prevents flexion of foetal head.

Series	**Incidence of brow presentation**
TF Baskett et al	19.2%
Sharma,Acharya Mittal[26]	15.8%
In our Study at IOG:	0.32% (year2000) & 0.24%(year2006)

Malpresentations and Malpositions in Multipara

Malpresentations are favoured by a pendulous abdomen and lordosis of lumbar spine. Transverse lie is the most common malpresentation. Incidence of transverse lie increases with parity occurring 10 times more frequently in multi of parity 4 and above, than in primi.

REPORTED INCIDENCE OF MALPRESENTATION IN MULTI.

Author	**%**
Dey & Das (1974)[23]	9
Jacob & Bhargava[77]	30
Kasturilal[41]	35.3
Kleins (1963)[42]	10.2
O'Sullivan[57]	20.7
Palanichamy[65]	32.6

In our study at IOG,number of malpresentations in multi

	2000	**2006**	**p value**
P1 group	50	53	0.629
P2 & above group	34	43	0.299

In our study in IOG, there is no significant increase in caesarean sections for malpresentations and malpositions between the years 2000 and 2006 in all the parity groups.

Prolonged labour (uterine dysfunction): Prolonged labour complicated 12 out of 155 cases during 1981-82 and 43 cases out of 310 in 2000-01 in Ashok kumar's[5] study. There is not much change in trend as far as this indication is concerned in that study. This group includes following cases e.g. failure to progress in labour,, prolonged rupture of membranes with failed acceleration and incoordinated uterine activity, cervical dystocia.

In IOG ,there has been a statistically significant increase in the number of caesarean sections for prolonged labour in 2006 (3.35% to 4.75%) compared to 2000. The increase in significant statistically especially in the nulliparous group (P0.001).).

Active management of labour refers to a labour ward protocol for low- risk women that included one-to-one support in labour, routine amniotomy (artificial rupture of the amniotic membrances) and the use of the intravenous drug oxytocin, strict criteria for the labour, abnormal progress in labour and fetal compromise and peer review of assisted deliveries (daily retrospective and critical review of the reasons why assisted deliveries were carried out)(O'Driscoll 1970)[55,56]. During the first stage of labour, acceptable rate of progress was set at 1 cm cervical dilatation per hour and during the second stage, progress was measured in terms of descent and subsequent rotation of the head. A maximum of 10 hours was allowed for the first stage of labour and two hours for the second stage.The original description of active management of labour also included the continual presence of a nurse during labour (O'Driscoll

1973). Observational studies by the initiators of active management showed lower caesarean section rates, less prolonged labour, better neonatal outcomes and maternal satisfaction (O'Driscoll 1984).

Failed induction of labour

Induction of labour is indicated in cases of prolonged pregnancies, uncontrolled PET, pre labour rupture of membrances. There is a statistically significant decrease in the number of caesarean sections in all parity groups in 2006 (5.2%) in IOG for failed inductions compared to 2000. This can be attributed to the strict adherence to the protocols for induction, induction of post dated pregnancies at 41 weeks, avoiding unwarranted inductions and effective induction procedures like dinoprostone gel and maintenance of its efficacy by refrigeration.

Severe Pre-eclampsia , imminent eclampsia and AP eclampsia.

In severe cases of PET and eclampsia, caesarean section is resorted to when there is no response to conservative therapy. In our study, there a decrease in CS for severe PET& its complications from 42.6% in 2000 to 3.88% in 2006. There is actually a decrease in the number of caesarean sections for PET in P1& P2 group ,while in the nulliparous group the number of caesarean sections for PET has increased.The overall decrease in caesarean sections for PET is probably due to routine use of magnesium sulphate regimen in our institute which has improved the prognosis for vaginal delivery.

Multiple Gestations

During 1981-82, one patient with twin pregnancy was submitted to caesarean section ,while in 2000-01, 3 patients were submitted to section in Ashok Kumar's study. It is observed that the apgar score of second twin born vaginally is always significantly lower than that of first. Whereas in caesarean section, apgar of both the babies are the same.Twin pregnancy with associated risk factors should be subjected for operative delivery. The most common indication is presentation other than cephalic by one or both fetuses. (AIMS Journal 1994). In our study in IOG, there is a statistically significant increase in the caesarean sections for twin pregnancies from 28 caesarean sections in 2000 (0.65%) to 55 caesarean sections in 2006 (1.21%) (p0.003) and most of this increase was contributed by caesareans sections for nonvertex presentations of first twin which were 19 cases in 2006 compared to 10 cases in 2000.

IUGR

Cases of severe IUGR with Colour Doppler showing severe foetal compromise, reverse of diastolic flow, CTG abnormalities also were up taken for caesarean sections. There has been a statistically significant increase in the number of caesarean sections for IUGR in 2006 in our study in IOG. This is especially so in the nulliparous group.Compared to 2000 ,in 2006 colour doppler studies were increasingly being used in our hospital and severe cases of IUGR were identified and taken up for Caesarean section.

OLIGOHYDRAMNIOS

Caesarean section is resorted to in cases of severe oligohydramnios with fetal compromise. There has been a statistically significant increase in our study in IOG for this indication in 2006 (2.68%) compared to 2000 (1.69%) (p0.000) and this increase is mostly in the nulliparous group.

BAD OBSTETRIC HISTORY : This group includes those with previous history of still birth or neonatal death or recurrent abortions. Most of them undergo elective LSCS.

REPORTED INCIDENCE

Author	**%**
Jacob & Bhargava[77]	5.3
Klein[42]	2.2
O'Sullivan[57]	1.3
Vashista[40]	12.96

In IOG, the number of caesarean sections for BOH were 157 (3.69%) in 2000 and 77 (1.69%) in 2006. Thus the number of CS for BOH has decreased in 2006 compared to 2000. Similarly there is also a decrease in CS performed in elderly primi with long period of infertility from 152(N) (3.57%) in 2000 to 75(N)(1.65%) in 2000.

Maternal Mortality Rates

The MMR per 1 Lakh deliveries has shown a increase from 224/1Lakh deliveries in 2000 to 273/ 1 Lakh deliveries in 2006. In 2000,

out of 14 deaths following LSCS, 6 were due to AP eclampsia, 2 were due to abruption, 1 due to heart disease, 3 due to PET, 1 due to hepatic encephalopathy and only 1 was directly related to LSCS. In 2006, out of 22 deaths following LSCS, 4 were due to AP eclampsia, 2 due to abruption, 8 due to severe PET and imminent eclampsia etc., 2 following septicemia, 1 following jaundice complicating pregnancy, 2 following pulmonary embolism and 1 was a case referred from outside as refractory pulmonary edema and only 2 were following atonic PPH following LSCS.

Perinatal Mortality Rates

There is also a mild increase in PNMR from 63/1000 live births in 2000 to 67 / 1000 live births in 2006.

SUMMARY

1. 7186 cases of caesarean section performed in the year 2000 were studied and compared with 7448 caesarean sections performed in 2006. Total no of deliveries were 20,027 in 2000 and 17,890 in 2006. Incidence of caesarean sections was 35.85% in 2000 and 41.63% in 2006. The increase in the incidence was found to be significant statistically as p is less than 0.01.

2. Maximum no. of patients were found to be in the age group 20-24 yrs.

3. Most of the patients were primiparas in both 2000& 2006. Incidence of caesarean sections was seen increasing in primgravida.

4. 40.86% of patients in the 2000 series underwent repeat caesarean section as compared to 39.09% in the 2006 series, almost the same rate.

5. The increase in caesarean section incidence is therefore mainly contributed by primary caesarean sections which were 4246 in 2000 and 4536 in 2006 and the increase is significant statistically (p0.002).

6. Following were the main indications contributing to the rise in the incidence of primary caesarean sections:a) CPD, b) Foetal distress c) twin gestations d) IUGR e) failed acceleration f) oligohydramnios g) Breech presentations.

7. There is a decrease in caesarean sections for failed induction, BOH and elderly primi in 2006 compared to 2000.

8. VBAC rates have slightly increased from 6.96% in 2000 to 7.35% in 2006.

9. The MMR per 1 Lakh deliveries has shown a increase from 224/1Lakh deliveries in 2000 to 273/ 1 Lakh deliveries in 2006.This may be due to increased referral of complicated cases. There also appears to be a increase in the number of deaths following LSCS, but this increase is only apparent as most of the deaths were due to associated other complications and not directly related to LSCS.

10. There is also a mild increase in PNMR from 63/1000 live births in 2000 to 67 / 1000 live births in 2006.

CONCLUSION

The incidence of caesarean section in IOG has steadily increased from 2000 to 2006. This increase is contributed mainly by primary caesarean sections especially in the nulliparous group. Inspite of an increase in number of CS rates, the PNMR has not shown a decline in 2006 compound to 2000. Judicious decision making for primary caesarean sections will help reducing the caesarean section rate.

Increasing caesarean section rates are a potential burden on health resources with no proven benefit in perinatal mortality and possible increases in maternal morbidity. Hence different measures to reduce CS rates have been proposed .(Walker2002).[68]

SUGGESTIONS TO REDUCE CAESAREAN SECTIONS:

The interpretation of CTG should be done cautiously having in mind the high false positive rates of non reactive CTGs and should be correlated clinically.Antepartum nonreactive CTGs should be substantiated with Doppler studies.Fetal blood sampling should be available for cases in labour to avoid errors and support the evidence of fetal distress.

As CPD is the leading indication in 2006,partogram should be maintained for all labouring mothers so as to decide whether caesarean section is required at that point of time or patient can be observed for some more time.

Judicious use of induction procedures adhering to standard protocols should be practiced.

There should be an increase in VBAC rates in a tertiary institution like ours, where medical and paramedical personnel are available round the clock.

Since the 1960s active management of labour has been proposed as an effective way to decrease caesarean section rates by reducing the proportion of women with failure to progress (O Driscoll 1984)[55,56].

Peer reviewing and mandatory second opinion was associated with a small but significant reduction in the caesarean section rate without an adverse effect in maternal and perinatal morbidity and hence should be advocated.

In the study done at the Nowrosjee Wadia Maternity hospital[80] in Mumbai, the caesarean section rate increased from 1.9% to 16% in 40 years (1957-1998), but without any improvement in overall perinatal outcome beyond a caesarean section rate of 10%. On the contrary, caesarean deliveries remained constant at around 4% at the National Maternity Hosptial, Dublin, from 1965 to 1975, and increased only marginally to nearly 5% in the early 1980s .A remarkable feature of the Dublin experience was a considerable reduction in perinatal mortality from 42 per 1,000 births in 1695 to 16.8 per 1,000 in 1980 despite the steady caesarean section rate.

Obstetrical care in the light of increasing prosperity is characterized by a tendency toward a greater patient involvement in clinical decision – making[14,59]. Sachs et al[72], for instance, stated that a couple's expectation of a perfect baby, as well as a women's previous experience of difficult labor, undoubtfully also plays a part in the decision to perform a caesarean delivery. Individualization of every case, meticulous clinical examination, intrapartum fetomaternal surveillance, obstetric audits, following standard protocols and practicing evidence based medicine will help in reducing the rates of caesarean sections.

Provision of adequate antenatal health services, timely identification of high risk cases, public awareness, interlined close relationship between primary health services and tertiary hospital, early referral with back-up system, improvement in existing health facility in a teaching hospital with involvement of senior, skilled and experienced personnel in the management of obstetrics emergencies are the measures to be adopted to reduce the caesarean section rate, maternal morbidity and mortality and to improve fetal outcome.

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PROFORMA

Name: Age: I.P.NO:

Address:

Socio Economic Status

G P A L

Date of surgery:

Menstrual History:

Marital history:

Obstetric History(FTND/Instrumental delivery/B.wt Etc)

Past History:

Details of present pregnancy:

Time of Admission:

Admitted with c/o pain/draining etc:

General Examination:

Obstetric examination:

Investigations:

USG:

CTG:

Intra partum period:

Any H/O cerviprime induction:

ARM:

Syntocinon acceleration:

Caesarean section:

Indication:

Time:

Anaesthesia:

Per op findings:

Baby:

Wt:

Sex:

Apgar:

ABBREVIATIONS

APH	-	Antepartum haemorrhage.
AP eclampsia	-	Antepartum eclampsia
APLA	-	Antiphospholipid antibody syndrome
ACOG	-	American college of Obstetricians andGynaecologists
BOH	-	Bad obstetric history
BMJ	-	British Medical Journal
BJOG	-	British Journal of Obstetrics and Gynaecology
CI	-	Confidence Interval
CPD	-	Cephalo pelvic disproportion
CS	-	Caesarean section
CPT	-	Complete perineal tear
DTA	-	Deep transverse arrest
FD	-	Fetal distress
GA	-	General Anaesthesia
GDM	-	Gestational Diabetes Mellitus
Gyn.,Gynaecol	-	Gynaecology
HIV	-	Human immunodeficiency virus
IUGR	-	Intrauterine growth restriction
IOG	-	Institute of obstetrics and gynaecology
IPsepsis	-	Intrapartum sepsis
MMR	-	Maternal mortality rate
N.No	-	Number
NMR	-	Neonatal mortality rate
NS	-	Not significant
NST	-	Non-stress Test
Obs.,Obstet.	-	Obstetrics

OBG	-	Obsterics and Gynaecology
PNMR	-	Perinatal mortality rate.
PET	-	Pre eclamptic toxaemia.
P1	-	Para 1
P2	-	Para 2
P3	-	Para 3
P4	-	Para 4
P5	-	Para 5
RCOG	–	Royal College of Obstetricians and Gynaecologists
ROP	-	Right occipitoposterior
RPT. CS	-	Repeat Caesarean Section
UK	-	United kingdom
US	-	United states
VBAC	-	Vaginal birth after Caesarean

DISSERTATION ON

CHANGING TRENDS IN CAESAREAN SECTION RATES IN IOG

A Comparative Study Between the Years 2000 & 2006

Submitted in partial fulfilment of

Requirements for

M.D. (BRANCH - II)

OBSTETRICS AND GYNAECOLOGY

of

THE TAMILNADU DR.M.G.R MEDICAL UNIVERSITY

CHENNAI

INSTITUTE OF OBSTETRICS AND GYNAECOLOGY

MADRAS MEDICAL COLLEGE

CHENNAI – 600 003.

MARCH 2008

CERTIFICATE

This is to certify that this dissertation entitled **" CHANGING RENDS IN CAESAREAN SECTION RATES IN IOG – a comparative study between the years 2000 & 2006"** is the bonafide work done by **Dr.A.MYTHILY** at the Institute of Obstetrics and Gynaeoclogy, Government Hospital for Women and Children attached to Madras Medical College, Chennai. from 2005-2008.

This dissertation submitted to Dr.M.G.R.Medical University is in partial fulfillment of the University rules and regulations for the award of M.D.Degree in Obstetrics and Gynaecology.

DEAN

Madras Medical College
Chennai – 600 003

Director and Superintendent

Institute of Obstetrics and Gynaecololgy
Egmore, Chennai – 600 008.

CONTENTS

A2

MONTH

SL. NO.	NAME	AGE	ID. NO.	IS. SCORE	DOS	OP	INDICATION	SEX
1	alima	26	11	PRIMI	3\1\06		CPD	alive girl
2	saikala	28	6	PRIMI	3\1\06		Failed inductio	alive girl
3	vasanth	21	1283	PRIMI	4\1\06		breech	alive girl
4	nirmala	19	423	PRIMI	4\1\06		Fetal distress	alive boy
5	sankaresw	21	313	PRIMI	5\1\06		CPD	alive boy
6	jayashree	23	857	PRIMI	7\1\06		Breech	alive boy
7	padmavath	21	484	PRIMI	8\1\06		Fetal distress	alive boy
8	radha	20	1083	G2A1	10\1\06		Failed inductio	alive girl
9	vani	27	1086	PRIMI	12\1\06		CPD	alive girl
10	suseela	21	1217	PRIMI	13\1\06		Fetal distress	alive girl
11	selvi	25	1149	PRIMI	14\1\06		Failed inductio	alive girl
12	sumathy	26	1129	PRIMI	15\1\06		Fetal distress	alive girl
13	revathy	26	1565	PRIMI	16\1\06		CPD	alive girl
14	kavitha	21	1727	PRIMI	18\1\06		Fetal distress	alive girl
15	vinnarasi	23	1674	PRIMI	17\1\06		Failed acceler	alive girl
16	vasanthkur	20	1554	PRIMI	19\1\06		Fetal distress	alive girl
17	mahalaksh	18	1820	PRIMI	22\1\06		CPD	alive girl
18	padmini	28	1402	PRIMI	23\1\06		Fetal distress	alive boy
19	jayalakshm	29	1802	PRIMI	25\1\06		CPD	alive boy
20	poomani	18	1668	PRIMI	25\1\06		CPD	alive boy
21	balambigai	26	1821	PRIMI	26\1\06		Fetal distress	alive boy
22	subbulaksh	27	1289	PRIMI	27\1\06		CPD	alive boy
23	selvi	26	1987	PRIMI	27\1\06		CPD	alive boy
24	kalaiselvi	23	2021	PRIMI	28\1\06		Fetal distress	alive girl
25	thiripurasu	26	2115	PRIMI	28\1\06		Fetal distress	alive girl
26	swathy	27	2296	PRIMI	29\1\06		Fetal distress	alive girl
27	sasikala	20	2428	PRIMI	2\2\06		Failed inductio	alive girl
28	sumathy	20	2306	PRIMI	2\2\06		Fetal distress	alive girl
29	kavitha	21	2049	PRIMI	3\2\06		failed inductior	alive girl
30	pushpalath	23	2013	PRIMI	4\2\06		CPD	alive girl
31	imtiaz	21	2413	PRIMI	5\2\06		Fetal distress	alive boy
32	begum	24	2226	PRIMI	5\2\06		Failed acceler	alive boy
33	thameemu	25	2511	PRIMI	7\2\06		Fetal distress	alive boy
34	narmadha	29	2364	PRIMI	9\2\06		Failed acceler	alive boy
35	kavitha	20	2179	PRIMI	9\2\06		CPD	alive boy
36	chitra	19	2907	PRIMI	11\2\06		Fetal distress	alive boy
37	kousalya	18	2681	PRIMI	12\2\06		CPD	alive boy
38	nasiyabanu	21	2478	PRIMI	12\2\06		breech	alive boy
39	mano	23	3038	PRIMI	13\2\06		Fetal distress	alive girl
40	sujatha	23	3143	PRIMI	15\2\06		CPD	alive girl
41	dhanaksh	24	3201	PRIMI	15\2\06		Fetal distress	alive girl
42	murugesw	25	3303	PRIMI	16\2\06		CPD	alive girl
43	thilagavath	26	3015	PRIMI	19\2\06		Fetal distress	alive girl
44	lavanya	21	3259	PRIMI	23\2\06		CPD	alive girl
45	sasikala	20	3661	PRIMI	24\2\06		Fetal distress	alive girl
46	praba	20	3671	PRIMI	24\2\06		CPD	alive girl
47	sharmila	26	3699	PRIMI	26\2\06		CPD	alive girl

48	poornima	21	3580	PRIMI	26\2\06	CPD	alive girl
49	selvi	27	3954	PRIMI	28\2\06	Fetal distress	alive girl
50	vijayalaksh	21	4244	PRIMI	2\3\06	CPD	alive boy
51	ganga	23	4130	G2A1	4\3\06	Fetal distress	alive boy
52	gomathi	23	4543	PRIMI	4\3\06	CPD	alive boy
53	kavitha	24	4579	PRIMI	5\3\06	Fetal distress	alive boy
54	janaki	21	4650	PRIMI	7\3\06	CPD	alive girl
55	madhavi	20	4431	PRIMI	6\3\06	CPD	alive girl
56	sudha	24	4701	PRIMI	9\3\06	Breech	alive girl
57	kalpana	25	4762	PRIMI	9\3\06	Fetal distress	alive girl
58	yuvarani	27	4740	PRIMI	12\3\06	CPD	alive girl
59	kalaiselvi	21	4748	PRIMI	14\3\06	CPD	alive girl
60	pramila	23	4877	PRIMI	16\3\06	Fetal distress	alive girl
61	jayalakshm	30	4885	PRIMI	17\3\06	Fetal distress	alive girl
62	praba	31	1911	PRIMI	14\3\06	CPD	alive girl
63	rajathirajes	24	4648	PRIMI	16\3\06	CPD	alive girl
64	revathy	26	5049	PRIMI	19\3\06	Fetal distress	alive boy
65	mahalaksh	28	4938	PRIMI	21\3\06	Breech	alive boy
66	meenatchi	26	4958	PRIMI	21\3\06	Fetal distress	alive boy
67	ranjani	23	5176	PRIMI	23\3\06	CPD	alive boy
68	nagalakshr	21	5235	PRIMI	24\3\06	CPD	alive girl
69	daisyrani	20	5359	PRIMI	25\3\06	CPD	alive girl
70	vijayalaksh	20	4948	PRIMI	23\4\06	ROP	alive girl
71	dhanalaksh	20	5431	PRIMI	23\4\06	ROP	alive girl
72	sridevi	26	5381	PRIMI	25\4\06	Fetal distress	alive girl
73	preetha	23	5395	PRIMI	26\4\06	Fetal distress	alive girl
74	ranipriya	23	5386	G3A2	27\4\06	Failed inductio	alive boy
75	priya	25	4665	PRIMI	23\3\06	CPD	alive boy
76	poorni	21	5421	PRIMI	24\3\06	Failed inductio	alive boy
77	chitra	24	5775	PRIMI	23\3\06	Fetal distress	alive boy
78	rontemary	26	5812	PRIMI	25\3\06	CPD	alive boy
79	selvi	20	5869	PRIMI	25\3\06	CPD	alive boy
80	vijayalaksh	21	5121	PRIMI	28\3\06	CPD	alive boy
81	michael va	25	5962	PRIMI	29\3\06	Failed acceler	alive boy
82	Umaselvi	23	6642	PRIMI	1\4\06	CPD	alive boy
83	amudha	23	6985	PRIMI	2\4\06	Fetal distress	alive boy
84	deepa	21	6505	PRIMI	2\4\06	CPD	alive girl
85	Catherine	24	6943	G3A2	4\4\06	CPD	alive girl
86	sreeja	21	6996	PRIMI	6\4\06	CPD	alive girl
87	amudha	25	6920	PRIMI	6\4\06	Fetal distress	alive girl
88	kamatchi	26	7117	PRIMI	7\4\06	CPD	alive girl
89	kalpana	27	7353	PRIMI	8\4\06	CPD	alive girl
90	gomathy	28	7570	PRIMI	9\4\06	Failed inductio	alive girl
91	malarkodi	20	7536	PRIMI	10\4\06	Fetal distress	alive girl
92	sangeetha	23	7380	PRIMI	13\4\06	Fetal distress	alive girl
93	elizabeth	21	7655	PRIMI	14\4\06	CPD	alive girl
94	rajeswari	25	7000	PRIMI	15\4\06	CPD	alive girl
95	mohanaval	21	7185	PRIMI	16\4\06	CPD	alive girl
96	devi	23	8051	PRIMI	17\4\06	CPD	alive girl
97	shoba	21	8041	PRIMI	18\4\06	Fetal distress	alive boy
98	kousarbegı	20	8201	PRIMI	19\4\06	Failed inductio	alive boy

99	noubar	29	7915	G3A2	20\4\06	Fetal distress	alive boy
100	meenatchi	21	8291	PRIMI	21\4\06	BOH	alive girl
101	anithadevi	23	7904	PRIMI	22\4\06	Fetal distress	alive girl
102	mohanaval	21	8451	PRIMI	22\4\06	CPD	alive girl
103	divya	21	8280	PRIMI	23\4\06	CPD	alive girl
104	amul	23	8004	PRIMI	24\4\06	Failed acceler	alive girl
105	fathima	21	8336	PRIMI	25\4\06	Fetal distress	alive girl
106	sreeja	23	8471	PRIMI	26\4\06	Fetal distress	alive girl
107	esther	24	8556	PRIMI	26\4\06	Breech	alive girl
108	dhanalaksh	25	7902	PRIMI	27\4\06	Fetal distress	alive girl
109	banu	27	7989	PRIMI	27\4\06	Fetal distress	alive girl
110	nalini	27	8564	PRIMI	28\4\06	CPD	alive girl
111	devi	27	8364	PRIMI	28\4\06	BOH	alive girl
112	vanitha	21	8432	PRIMI	29\4\06	CPD	alive girl
113	sangeetha	28	8687	G2A1	29\4\06	Fetal distress	alive girl
114	mohanaval	29	8431	PRIMI	30\4\06	Fetal alarm sig	alive girl
115	valli	20	8963	PRIMI	30\4\06	CPD	alive girl
116	swarnalath	21		PRIMI	1\5\06	Fetal distress	alive girl
117	indira	21		PRIMI	1\5\06	CPD	alive girl
118	mohana	20		PRIMI	2\5\06	CPD	alive girl
119	prajeetha	20		PRIMI	3\5\06	Fetal distress	alive boy
120	kalpana	20		PRIMI	3\5\06	Fetal distress	alive boy
121	naveen	19		PRIMI	3\5\06	CPD	alive boy
122	manimegal	23		PRIMI	5\5\06	CPD	alive boy
123	sumathy	24		PRIMI	6\5\06	CPD	alive boy
124	helen	24		G3A2	7\5\06	Breech	alive boy
125	maheswari	23		PRIMI	8\5\06	Fetal distress	alive boy
126	chandrakal	21		PRIMI	8\5\06	CPD	alive boy
127	maheswari	26		PRIMI	9\5\06	CPD	alive girl
128	chandrakal	20		PRIMI	10\5\06	CPD	alive girl
129	maheswari	27		PRIMI	11\5\06	Failed inductio	alive girl
130	radhika	28		PRIMI	12\5\06	Fetal distress	alive girl
131	umadevi	25		PRIMI	14\5\06	Fetal distress	alive girl
132	vijaya	23		PRIMI	15\5\06	Failed inductio	alive girl
133	latha	24		PRIMI	16\5\06	Fetal distress	alive girl
134	geetha	24		PRIMI	17\5\06	Failed acceler	alive girl
135	chitra	21		PRIMI	18\5\06	CPD	alive girl
136	daisy	20		PRIMI	18\5\06	CPD	alive girl
137	padmavath	27		PRIMI	19\5\06	Breech	alive girl
138	thirupurasu	23		PRIMI	20\5\06	Fetal distress	alive boy
139	chandrakal	21		G2A1	21\5\06	Fetal distress	alive boy
140	geetha	25		PRIMI	23\5\06	CPD	alive boy
141	basheer fat	26		PRIMI	21\5\06	CPD	alive boy
142	sameenabe	26		PRIMI	22\5\06	Fetal distress	alive girl
143	buvaneswa	21		PRIMI	23\5\06	Fetal distress	alive girl
144	dilshath	20		PRIMI	21\5\06	Fetal distress	alive boy
145	yamini	19		PRIMI	24\5\06	CPD	alive boy
146	sangeetha	24		PRIMI	23\5\06	Fetal distress	alive boy
147	yuvarani	26		PRIMI	25\5\06	CPD	alive girl
148	thayabee	26		PRIMI	26\5\06	Fetal distress	alive girl
149	sarala	23		PRIMI	27\5\06	CPD	alive girl

150	backiavath	21	PRIMI	28\5\06	CPD	alive girl
151	padmavath	21	PRIMI	2\6\06	Fetal distress	alive girl
152	ramesh	24	PRIMI	3\6\06	CPD	alive girl
153	sujatha	25	PRIMI	5\6\06	CPD	alive girl
154	priya	26	PRIMI	5\6\06	CPD	alive girl
155	hemalatha	23	PRIMI	6\6\06	Fetal distress	alive boy
156	kalaiselvi	21	PRIMI	7\6\06	CPD	alive boy
157	pratheeba	20	PRIMI	8\6\06	CPD	alive boy
158	jayanthi	20	PRIMI	8\6\06	Fetal distress	alive boy
159	kanimozhi	29	PRIMI	10\6\06	Fetal distress	alive boy
160	geeta	26	PRIMI	11\6\06	Failed inductio	alive boy
161	sangeetha	25	PRIMI	14\6\06	CPD	alive boy
162	sridevi	24	PRIMI	15\6\06	CPD	alive boy
163	malathy	23	PRIMI	14\6\06	CPD	alive boy
164	nagalakshr	21	PRIMI	16\6\06	Failed acceler	alive girl
165	hemamalin	26	PRIMI	16\6\06	Breech	alive girl
166	eswariasha	26	PRIMI	18\6\06	Fetal distress	alive girl
167	sarala	27	PRIMI	18\6\06	Fetal distress	alive girl
168	mythili	28	PRIMI	19\6\06	Fetal distress	alive girl
169	velankanni	29	PRIMI	19\6\06	Failed inductio	alive boy
170	kaniammal	21	PRIMI	21\6\06	Failed acceler	alive boy
171	megala	24	PRIMI	21\6\06	Fetal distress	alive boy
172	ilayarani	25	PRIMI	22\6\06	CPD	alive girl
173	rajalakshm	20	PRIMI	23\6\06	CPD	alive girl
174	sheeba	19	PRIMI	24\6\06	CPD	alive boy
175	chitra	20	PRIMI	25\6\06	Fetal distress	alive boy
176	shalini	23	PRIMI	26\6\06	Fetal distress	alive boy
177	prema	22	G2A1	28\6\06	Fetal distress	alive boy
178	mohanapri	21	PRIMI	28\6\06	Fetal distress	alive girl
179	sujatha	23	PRIMI	1\7\06	CPD	alive girl
180	latha	22	PRIMI	3\706	CPD	alive girl
181	divya	24	PRIMI	4\7\06	Fetal distress	alive girl
182	arulmozhi	25	PRIMI	4\7\06	fetal alarm sig	alive girl
183	sudharani	26	PRIMI	6\7\06	Fetal distress	alive girl
184	mitra	21	PRIMI	7\6\06	CPD	alive boy
185	dilshath	20	PRIMI	8\7\06	CPD	alive boy
186	kalpana	19	PRIMI	9\7\06	CPD	alive boy
187	buvaneswa	18	PRIMI	10\7\06	Fetal distress	alive boy
188	kavitha	25	PRIMI	10\7\06	Fetal distress	alive boy
189	mahalaksh	23	PRIMI	11\7\06	Failed inductio	alive boy
190	sathya	22	PRIMI	12\7\06	CPD	alive boy
191	saroja	21	PRIMI	13\7\06	CPD	alive boy
192	usha	25	PRIMI	14\7\06	Fetal distress	alive boy
193	shakila	26	PRIMI	15\7\06	Failed inductio	alive girl
194	saraswathy	24	PRIMI	16\7\06	Fetal distress	alive girl
195	sooryakala	23	PRIMI	17\7\06	Failed acceler	alive girl
196	ponmani	21	PRIMI	19\7\06	Fetal distress	alive girl
197	punithavall	28	PRIMI	21\7\06	CPD	alive girl
198	geetha	25	PRIMI	23\7\06	Fetal distress	alive girl
199	salomi	23	PRIMI	23\7\06	Fetal distress	alive girl
200	josephine	24	PRIMI	24\7\06	CPD	alive girl

201	renukadevi	26	PRIMI	25\7\06	Fetal distress	alive girl
202	sujatha	21	PRIMI	26\7\06	CPD	alive girl
203	sheela	23	G2A1	28\7\06	Fetal distress	alive boy
204	shobana	26	PRIMI	29\7\06	Failed inductio	alive boy
205	ashapriya	21	PRIMI	27\7\06	ROP	alive boy
206	suganthira	22	PRIMI	27\7\06	CPD	alive girl
207	menaka	20	PRIMI	29\7\06	Fetal distress	alive girl
208	priya	24	PRIMI	30\7\06	Breech	alive girl
209	revathy	21	PRIMI	30\7\06	CPD	alive girl
210	sangeetha	21	PRIMI	31\7\06	Fetal distress	alive girl
211	alliammal	24	PRIMI	1\8\06	CPD	alive girl
212	jothi	25	PRIMI	2\8\06	CPD	alive girl
213	megala	23	PRIMI	3\8\06	CPD	alive girl
214	renuka	21	PRIMI	5\8\06	Failed inductio	alive girl
215	gomathy	26	PRIMI	6\8\06	Failed acceler	alive girl
216	kalaiarasi	23	PRIMI	6\8\06	Fetal distress	alive boy
217	sarala	24	PRIMI	7\8\06	CPD	alive boy
218	sharmila	21	PRIMI	8\8\06	CPD	alive boy
219	kalyani	24	PRIMI	9\8\06	CPD	alive boy
220	arthi	25	G3A2	11\8\06	Fetal distress	alive boy
221	jancy	26	PRIMI	12\8\06	CPD	alive boy
222	selvi	19	PRIMI	13\8\06	Fetal distress	alive boy
223	jayashree	21	PRIMI	14\8\06	Breech	alive boy
224	indumathy	27	PRIMI	15\8\06	CPD	alive boy
225	lakshmipriy	24	PRIMI	15\8\06	CPD	alive boy
226	lakshmipriy	22	PRIMI	16\8\06	ROP	alive boy
227	pathimuthu	23	PRIMI	17\8\06	Fetal distress	alive boy
228	mohanamb	24	PRIMI	18\8\06	Failed inductio	alive boy
229	deepa	25	PRIMI	19\8\06	CPD	alive girl
230	revathy	21	PRIMI	20\8\06	Failed acceler	alive girl
231	sumathy	20	PRIMI	21\8\06	Fetal distress	alive girl
232	jansi	20	PRIMI	22\8\06	Fetal distress	alive girl
233	tamaraisel	20	PRIMI	23\8\06	CPD	alive girl
234	rathna	21	PRIMI	24\8\06	CPD	alive girl
235	shanthy	23	PRIMI	25\8\06	CPD	alive boy
236	stellamary	24	PRIMI	25\8\06	Fetal distress	alive boy
237	vasanthala	21	PRIMI	26\8\06	Fetal distress	alive boy
238	mullaimala	25	PRIMI	26\8\06	Fetal distress	alive boy
239	jayarani	26	PRIMI	27\8\06	Fetal distress	alive girl
240	ponmalar	21	PRIMI	28\7\06	Failed acceler	alive girl
241	thilaga	21	G2A1	28\7\06	Fetal distress	alive girl
242	amudha	24	PRIMI	29\8\06	Fetal distress	alive girl
243	rohini	24	PRIMI	30\8\06	Fetal alarm sig	alive girl
244	kavitha	23	PRIMI	2\9\06	CPD	alive boy
245	janci	21	PRIMI	3\9\06	CPD	alive boy
246	kalaiarasi	21	PRIMI	3\9\06	CPD	alive girl
247	sofiya	23	PRIMI	4\9\06	Fetal distress	alive girl
248	vani	24	PRIMI	4\9\06	CPD	alive girl
249	savithri	25	PRIMI	6\9\06	Fetal distress	alive girl
250	kavitha	23	PRIMI	7\906	Fetal distress	alive girl
251	nishikala	21	PRIMI	8\9\06	CPD	alive boy

252	marymatild	20	PRIMI	10\9\06	CPD	alive boy
253	rukmani	23	PRIMI	11\9\06	CPD	alive boy
254	dhanalaksh	21	PRIMI	11\9\06	Fetal distress	alive boy
255	raji	24	PRIMI	12\9\06	Fetal distress	alive girl
256	hemamalin	25	PRIMI	13\9\06	CPD	alive girl
257	kavitha	21	PRIMI	14\9\06	CPD	alive girl
258	ragini	23	PRIMI	15\9\06	Fetal distress	alive girl
259	caroline	25	PRIMI	16\9\06	Breech	alive boy
260	renukamba	26	PRIMI	17\9\06	CPD	alive boy
261	elizabeth	27	PRIMI	18\9\06	CPD	alive boy
262	tamilselvi	23	PRIMI	19\9\06	Fetal distress	alive girl
263	bavani	21	PRIMI	20\9\06	CPD	alive girl
264	suguna	23	PRIMI	21\9\06	CPD	alive girl
265	logeswari	21	PRIMI	22\9\06	CPD	alive girl
266	esther	23	PRIMI	23\9\06	Fetal distress	alive boy
267	preetha	21	G2A1	24\9\06	Breech	alive boy
268	ganga	24	PRIMI	25\9\06	Failed acceler	alive girl
269	Sujatha	23	PRIMI	26\9\06	Fetal distress	alive girl
270	sarala	20	PRIMI	27\9\06	Fetal distress	alive girl
271	jenitha	21	PRIMI	25\9\06	Fetal distress	alive girl
272	vijayalaksh	23	PRIMI	23\9\06	Fetal distress	alive girl
273	vimalpriya	24	PRIMI	12\9\06	Failed inductio	alive girl
274	rana	21	G2A1	13\9\06	Failed acceler	alive girl
275	bharani	24	PRIMI	28\9\06	Failed acceler	alive girl
276	neeladevi	25	PRIMI	28\9\06	Fetal distress	alive boy
277	premajoice	26	PRIMI	29\9]06	Failed inductio	alive boy
278	maheswari	21	PRIMI	29\9\06	Fetal distress	alive boy
279	vanitha	20	PRIMI	30\9\06	Failed inductio	alive boy
280	rathi	21	PRIMI	30\9\06	Fetal distress	alive girl
281	annalakshr	21	PRIMI	1\10\06	CPD	alive girl
282	geeta	23	PRIMI	1\10\06	Fetal distress	alive girl
283	shanthy	24	PRIMI	2\10\06	Fetal distress	alive girl
284	bindu	21	PRIMI	3\10\06	CPD	alive boy
285	devi	23	PRIMI	4\10\06	CPD	alive boy
286	vijayalaksh	23	PRIMI	5\10\06	Fetal distress	alive boy
287	jayanthi	21	PRIMI	6\10\06	Failed inductio	alive boy
288	saraswathy	20	PRIMI	7\10\06	CPD	alive girl
289	lakshmi	20	PRIMI	7\10\06	CPD	alive girl
290	kavithagra	19	PRIMI	8\10\06	Fetal distress	alive girl
291	chandra	21	PRIMI	9\10\06	Failed acceler	alive girl
292	rajeswari	20	PRIMI	11\10\06	CPD	alive girl
293	rajalakshm	20	PRIMI	12\10\06	Fetal distress	alive boy
294	vanaja	21	PRIMI	13\10\06	Fetal distress	alive boy
295	jayanthi	24	PRIMI	14\10\06	Failed inductio	alive boy
296	deepa	25	PRIMI	15\10\06	Failed acceler	alive boy
297	sruthi	23	PRIMI	16\10\06	CPD	alive boy
298	amirthavall	21	PRIMI	17\10\06	Fetal distress	alive girl
299	kamatchi	23	PRIMI	18\10\06	ROP	alive girl
300	samsathbe	24	PRIMI	18\10\06	Fetal distress	alive girl
301	manjula	20	PRIMI	19\10\06	CPD	alive girl
302	anusiya	20	PRIMI	20\10\06	CPD	alive girl

303	sheeba	21	PRIMI	22\10\06	Fetal distress	alive girl
304	sumatki	24	PRIMI	24\10\06	Fetal distress	alive girl
305	gomathi	21	PRIMI	25\10\06	CPD	alive boy
306	sangeetha	24	PRIMI	26\10\06	CPD	alive boy
307	rajeswari	25	G2A1	27\10\06	CPD	alive boy
308	starla	26	PRIMI	28\10\06	Fetal distress	alive boy
309	vadivukkar	28	PRIMI	29\10\06	Fetal distress	alive girl
310	banupriya	21	PRIMI	31\10\06	CPD	alive girl
311	anichamala	24	PRIMI	1\1\06	Failed inductio	alive girl
312	latha	25	PRIMI	1\11\06	CPD	alive girl
313	sunitha	21	PRIMI	2\11\06	CPD	alive girl
314	shanmugas	20	PRIMI	3\11\06	CPD	alive girl
315	pargavi	20	PRIMI	3\11\06	CPD	alive boy
316	devi	20	PRIMI	4\11\06	Fetal distress	alive boy
317	gomathy	19	PRIMI	5\11\06	Fetal distress	alive boy

P1

1	Meenakum	26	G2P1L1	1\1\06	CPD	alive girl
2	yasmin	28	G2P1L1	3\2\06	Fetal distress	alive girl
3	zarinabee	30	G3P1L1A1	5\2\06	Fetal distress	alive boy
4	sabira	32	G2P1L1	21\2\06	CPD	alive boy
5	vinitha	34	G2P1L1	3\3\06	Failed acceler	alive boy
6	manju	31	G2P1LO	17\3\06	CPD	alive boy
7	fathima	35	G2P1L1	20\3\06	CPD	alive boy
8	joy princilla	32	G2P1L1	22\3\06	Fetal distress	alive boy
9	catherine	28	G2P1L0	24\3\06	CPD	alive girl
10	deepa	26	G2P1L0	25\4\06	BOH	alive girl
11	rosy	24	G2P1L1	13\5\06	Failed inductio	alive girl
12	mangayark	23	G2P1L1	19\5\06	Fetal distress	alive girl
13	gulzar	21	G2P1L1	21\5\06	Fetal distress	alive girl
14	nithya	23	G2P1L1	12\6\06	CPD	alive boy
15	eswari	28	G2P1L1	18\6\06	BOH	alive boy
16	sandya	20	G2P1L1	16\7\06	Fetal distress	alive boy
17	seetha	24	G3P1L1A1	23\7\06	CPD	alive girl
18	kala	25	G2P1L1	21\8\06	Failed inductio	alive girl
19	chellamma	25	G2P1L1	23\8\06	Fetal distress	alive girl
20	komal	26	G3P1L1A1	21\9\06	Fetal accelera	alive girl
21	kamala	27	G2P1L1	15\10\06	CPD	alive girl
22	ananthi	28	G2P1L1	18\10\06	Fetal distress	alive boy
23	santhy	29	G4P1L1A2	21\11\06	Fetal distress	alive boy
24	revathy	31	G2P1L1	18\11\06	CPD	alive boy
25	nazreen	23	G2P1L1	21\12\06	CPD	alive boy

P3

1	sarala	26	G3P2LI	21\5\06	Fetal distress	alive boy

WT	APGAR	CODE
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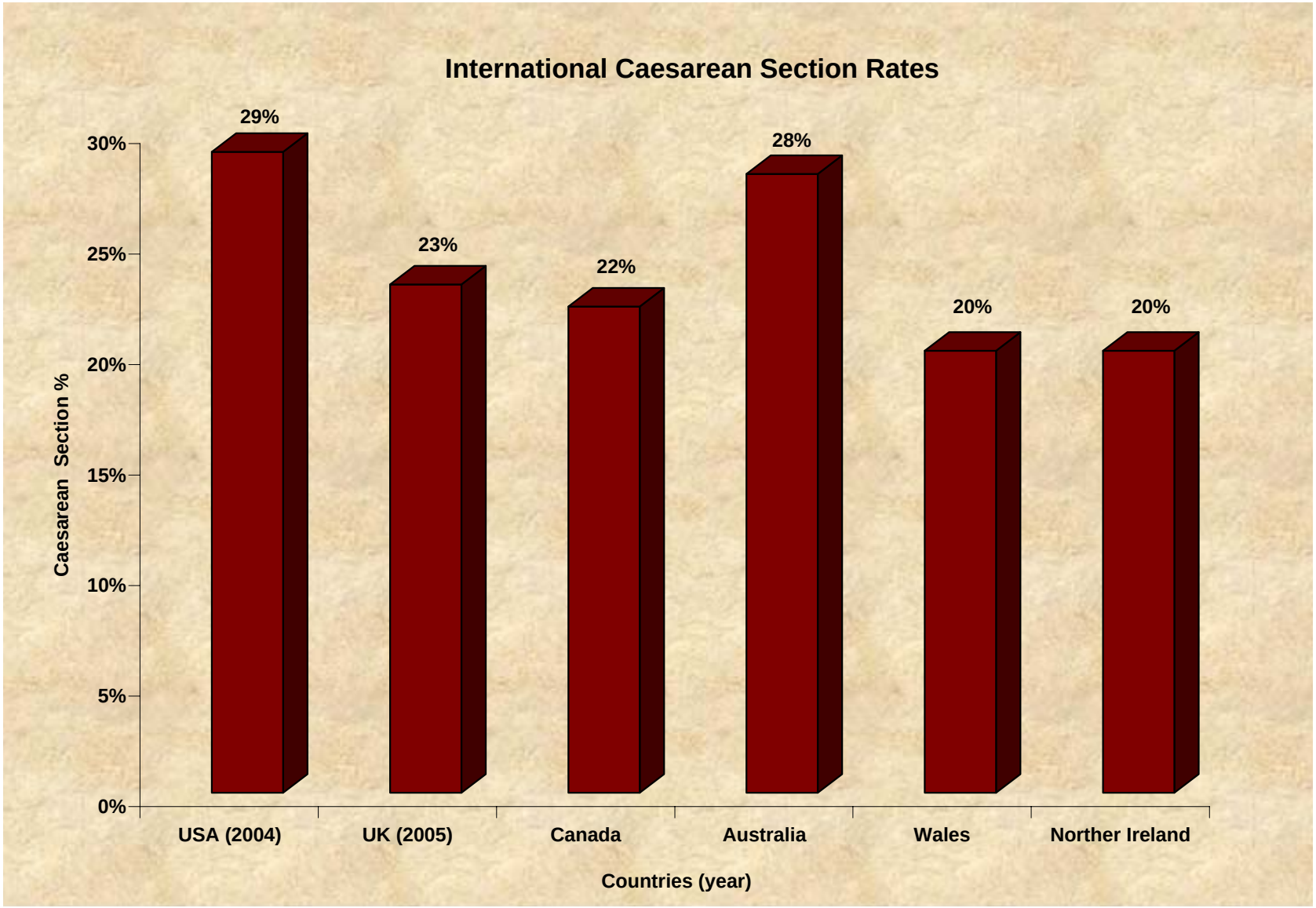
2.7	8/10,9/10	P1
3.7	8/10,9/10	P1
3.8	8/10,9/10	P1

3.25 8/10,9/10 P3

	2000	2006
Vaginal Deliveries	64.2	58.4
Caesarean Sections	35.8	41.6

1980	280
1985	140
1990	239.6
1995	253.4
2000	224
2006	273


International Caesarean Section Rates
Caesarean Section %
30%
25%
20%
15%
10%
5%
0%
29%
23%
22%
28%
20%
20%
USA (2004)
UK (2005)
Canada
Australia
Wales
Norther Ireland
Countries (year)